

Patents in Telecoms and the Internet of Things

FRAND Determination Methodologies II Top Down and Bottom Up

Keith Mallinson
Founder, WiseHarbor

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Top Down

- **Fine for those who voluntarily submit to such methods**
 - Patent pool participants seeking low rates, administrative simplicity and low operational costs in licensing
 - Bilateral licensors and licensees who also seek low royalty rates
- **But failings are significant**
 - Aggregate rates may bear little or no relationship to overall value of technologies in a standard
 - Methods for allocation of royalties among licensors are rudimentary, inaccurate and inconsistent with patent law
 - For example, patents do not all contribute the same value
 - Schemes, such as patent pooling, using such methods commonly seek to minimize patent value or diminish it below fair value
- **Those who seek full and fair compensation in licensing should not be bound by**
 - Top-down valuation methods, or
 - The inapplicable “comps” they set



Innovatio Top Down Decision: Holderman, 2013

- **“The requirement that a patentee apportion his damages in every case to the value of the patented features is well over a century old. As the Supreme Court explained in 1884, “[t]he patentee ... must in every case give evidence tending to separate or apportion the defendant's profits and the patentee's damages between the patented feature and the unpatented features.”**
- **“The court determines that the Top Down approach best approximates the RAND rate that the parties to a hypothetical ex ante negotiation most likely would have agreed upon in 1997, before Innovatio's patents were adopted into the standard.”**
- **“If the royalty is excessive in comparison to a chip manufacturer's profit margin on a chip, therefore, the royalty is too high.”**



Innovatio Top Down Decision: Holderman, 2013

- **“Dr. Leonard's method of basing the total potential royalty for all 802.11 standard-essential patents on the chipmaker's profit insures that the total royalty stack will not exceed an amount that would force chipmakers out of the business.”**
- **“Dr. Teece testified that in some cases, widespread infringement may have allowed manufacturers to set their prices very low, essentially ignoring the value of the intellectual property included in their products.”**
- **“In the record of this case, moreover, there is no evidence of widespread infringement of 802.11 standard-essential patents.”**
- **“The court agrees that the profit margin on an accused product is not always dispositive for determining a RAND rate.”**
- **“It is, however, something the court may consider as part of modified Georgia-Pacific Factors 12 and 13.”**



Why would a newer standard be valued less than its lower-performance predecessor?

- **MPEG-2 video patent pool**

- Standard definition video for TVs, set top boxes and DVDs
- 1,000 patents (mostly expired now)
- 27 licensors and 899 Licensees
- Maximum royalty per unit \$2.00, 2002-2016, then \$0.35

- **MPEG-4 Part 10 (AVC/H.264) video patent pool**

- HD video for TVs, set top boxes, Blu-Ray and smartphones
- >2,500 patents, majority of all SEPs, mostly unexpired
- 38 licensors and 1,476 licensees
- Maximum royalty per unit \$0.20 since 2005

- **Explanation: these patent pools are dominated by the same manufacturers, who might rather**

- Minimize royalty out-payments than
- Maximize the royalties they receive
- And possibly changed their minds about the “value” of their patents when they checked net licensing payments?



Ultra-High Definition video (HEVC/H.265) pools

- **MPEG LA**

- Many thousands of patents (too many to count)
- 40 licensors and 287 licensees
- Maximum royalty per unit \$0.20 from 2013

- **HEVC Advance**

- 2,430 patents
- 27 licensors and undisclosed number of licensees
- Maximum royalties rather more than double those for MPEG LA

- **Some licensors are in both pools**

- E.g. Samsung Electronics



Why did SEP owners seek to cap LTE royalties in 2008 Framework Agreement?

- **Alcatel-Lucent, Ericsson, NEC, NextWave Wireless, Nokia, Nokia Siemens Networks and Sony Ericsson**

"agree, subject to reciprocity, to reasonable, maximum aggregate royalty rates based on the value added by the technology in the end product and to flexible licensing arrangements according to the licensors' proportional share of all standard essential IPR for the relevant product category.

Specifically, the companies support that a reasonable maximum aggregate royalty level for LTE essential IPR in handsets is a single-digit percentage of the sales price. For notebooks, with embedded LTE capabilities, the companies support a single-digit dollar amount as the maximum aggregate royalty level." (Emphasis added.)

- **Explanation. At the time, these companies were more exposed in downstream product markets as users of others' patented technologies, than they could gain as licensors of SEPs. For example Nokia had:**

- 13% share of declared-essential 3GPP SEPs in 2005
- 32% and 40% handset market shares in 2005 and 2008, respectively



Nobody pays anything near aggregate maximum

- **Average aggregate royalties paid—no more than around 5 percent of smartphone sales prices and revenues**
 - Top three licensors with majority of SEPs—Ericsson, Nokia and Qualcomm—account for less than 2 percent of handset sales revenues in 2018
 - Extensive netting off in cross-licensing among manufacturers
- **Even implementers without patents to cross-license pay little or no more than averages**
 - Widespread non-assertion
 - Hold-out
- **Courts whittle-down what is paid below maxima (e.g. TCL v Ericsson)**
 - Regarding single-mode rates as multi-mode rates
 - Reductions for patent expiration
 - Reductions for geographies where there is less patenting



Bottom Up

- **A methodology that is consistent with patent law**
 - “The requirement that a patentee apportion his damages in every case to the value of the patented features is well over a century old. As the Supreme Court explained in 1884, “[t]he patentee ... must in every case give evidence tending to separate or apportion the defendant's profits and the patentee's damages between the patented feature and the unpatented features.”
- **Where patented features increase the utility, sales and profits it is appropriate to**
 - Apportion those values among patented and unpatented features
 - Compare costs of patented features with costs of implementing reasonable alternatives to the patents that could have been adopted into the standard



Similar spec, but at twice the price with cellular*

iPod Touch 5th Generation (no cellular capabilities)



\$199 price for 16 GB version, May 2015*

iPhone 5c



\$450 price, unlocked and contract/SIM free, for 8 GB version, May 2015**

*With equivalent comparison between iPads; cost of adding cellular is \$32 in components plus \$1 in manufacturing: <http://www.isuppli.com/Teardowns/News/Pages/New-iPad-Air-Costs-Less-to-Make-Than-Third-Generation-iPad-Model-IHS-Teardown-Reveals.aspx>.

**According to Apple's US web site. <http://www.apple.com>



And iPhones outsold all iPod models 46-fold in revenues and 12-fold in volume

From Apple's "10K" annual financial report to yearend September 2014

Table of Contents

Sales Data

The following table shows net sales by operating segment and net sales and unit sales by product during 2014, 2013 and 2012 (dollars in millions and units in thousands):

	2014	Change	2013	Change	2012
Net Sales by Operating Segment:					
Americas	\$ 65,232	4%	\$ 62,739	9%	\$ 57,512
Europe	40,929	8%	37,883	4%	36,323
Greater China	29,846	17%	25,417	13%	22,533
Japan	14,982	11%	13,462	27%	10,571
Rest of Asia Pacific	10,344	(7)%	11,181	4%	10,741
Retail	21,462	6%	20,228	7%	18,828
Total net sales	\$182,795	7%	\$170,910	9%	\$156,508
Net Sales by Product:					
iPhone (1)	\$101,991	12%	\$ 91,279	16%	\$ 78,692
iPad (1)	30,283	(5)%	31,980	3%	30,945
Mac (1)	24,079	12%	21,483	(7)%	23,221
iPod (1)	2,286	(48)%	4,411	(21)%	5,615
iTunes, Software and Services (2)	18,063	13%	16,051	25%	12,890
Accessories (3)	6,093	7%	5,706	11%	5,145
Total net sales	\$182,795	7%	\$170,910	9%	\$156,508
Unit Sales by Product:					
iPhone	169,219	13%	150,257	20%	125,046
iPad	67,977	(4)%	71,033	22%	58,310
Mac	18,906	16%	16,341	(10)%	18,158
iPod	14,377	(45)%	26,379	(25)%	35,165

(1) Includes deferrals and amortization of related non-software services and software upgrade rights.

(2) Includes revenue from the iTunes Store, the App Store, the Mac App Store, the iBooks Store, AppleCare, licensing and other services.

(3) Includes revenue from the sale of accessories.

Apple generated more than \$40 billion annually in gross profits on its iPhones with margins in the 40%-50% range



Bottom-up value in MBB for video streaming?

- **Video accounts for 19% of 3 hours US daily smartphones usage and 60% of global network traffic**
- **Average monthly cellular mobile data consumption is 2.6 GB per connection and 4.7 GB per person worldwide**
 - Equivalent, per person, to 6.7 hours of standard definition 480p video streaming at 3 Mbps or 4.3 hours of high definition 780p or 1080p video streaming at 5 Mbps
- **Technology needed to stream video from the Internet to smartphones while on the move is at least: 3G for SD, LTE for HD and LTE-A Pro or 5G for ultra-HD/4K**
- **Revenues significantly due to video streaming include**
 - \$1 trillion in cellular mobile services
 - \$495 billion in mobile phone sales
 - \$16 billion in subscriptions for Netflix
 - \$3.4 billion ad revenues for YouTube in US alone
- **SEP and NEP fees paid less than 1.5% of mobile ecosystem revenues**



Thank You



Keith Mallinson

Founder

WiseHarbor

Phone: +44 20 7193 0339

+1 617 418 3977

Email: kmallinson@wiseharbor.com

Twitter: @WiseHarbor

www.wiseharbor.com

WiseHarbor helps its clients solve commercial problems using market analysis.

Keith Mallinson is s contributor to IP Finance (<http://ipfinance.blogspot.com>) "where money issues meet IP rights". This weblog looks at financial issues for intellectual property rights. Keith Mallinson writes on the subject of intellectual property in standardised technologies such as those used in 3G, 4G and 5G mobile communications. He is also a regular contributor to the mobile communications trade press with industry analysis and opinion at RCR Wireless: <https://www.rcrwireless.com/tag/wiseharbor-keith-mallinson>

My articles with IP Finance and in trade publications are listed and linked on the WiseHarbor web site: <http://www.wiseharbor.com/publications.html>

