

Cumulative mobile-SEP royalty payments no more than around 5% of mobile handset revenues

Vested interests including leaders at the mobile operator dominated NGMN Alliance¹ promote the notion that patent licensing fee rates are “perceived” to be too high in mobile technologies; but without substantiation for such claims. Speculation that patent fees, largely for mobile SEPs, may total 30 percent of smartphone costs are projected by Intel and others.² This grossly inflated figure is based on theories of hold-up and royalty stacking that lack empirical support and it ignores marketplace realities including cross licensing and discounting rates for other reasons in patent-licensing agreement negotiations, as I have already criticized.³ That percentage would equate to more than \$110 billion being paid per year in patent fees based on total global handset revenues of \$377 billion in 2013 and \$410 billion in 2014.⁴



Actual payments are much smaller than such perceptions and projections. Figure 1 summarizes fairly exhaustive analysis of significant mobile-SEP licensing costs based on reported licensing revenues from the audited financial reports of major licensors and other public sources including patent pool rate-card charges. Based on these figures, it is implausible that total royalties actually paid, including lump sums and running royalties, for standard-essential 2G, 3G, and 4G technologies, amount to more than approximately \$20 billion per year. This figure represents a cumulative royalty yield for licensors of around five percent on mobile handset revenues.

Figure 1: Mobile SEP Licensing Fee Revenues and Royalty Yields on Global Handset Market

	2014	
	Revenues	Yield*
Major SEP owners with licensing programs: Alcatel-Lucent, Ericsson, Nokia, InterDigital, Qualcomm	\$10.6 billion	2.6%
Patent Pools: SIPRO (WCDMA), Via Licensing (LTE), Sisvel (LTE)	<\$4 billion	<1%
Others: including Apple, Huawei, RIM, Samsung, LG	<\$6 billion	<1.5%
Cumulative maximum: fees and yield for mobile SEPs	~\$20 billion	~5%

* Yields are total licensing fee revenues including lump sums and running royalties as a percentage of \$410 billion in total global handset revenues

¹ <https://www.ngmn.org/home.html>

² A working paper entitled *The Smartphone Royalty Stack: Surveying Royalty Demands for the Components Within Modern Smartphones* was published by one in-house lawyer at Intel and two outside counsel from WilmerHale. Intel Vice President and Associate General Counsel Ann Armstrong and Wilmer Hale's Joseph Mueller and Timothy Syrett argue that aggregate patent licensing fees including SEPs and non-SEPs are excessive at around \$120 per \$400 smartphone.

³ <http://ipfinance.blogspot.co.uk/2014/09/stacking-deck-in-analysis-of-smartphone.html> and <http://www.wiseharbor.com/pdfs/Mallinson%20on%20Intel's%20Smartphone%20Royalty%20Stack%2019Sept2014.pdf>

⁴ Morgan Stanley and IDC

The majority of mobile-SEP licensing fees are earned by five companies with licensing programs who have collectively contributed most patented technologies to 2G, 3G and 4G standards. Alcatel-Lucent, Ericsson, InterDigital, Nokia and Qualcomm altogether generate \$10.6 billion per year in licensing fees for these and other technologies. Also collectively, this represents a yield of significantly less than three percent of total global revenues for mobile handsets including smartphones.

Cumulative mobile-SEP fees paid also include less than around one percent of total handset revenues to the three mobile-SEP patent pools plus, at most, one percent or so more to other companies licensing mobile SEPs bilaterally. Patent pools lay out their prices and so these indicate the maximum they might be able to collect with willing and responsive licensees and a lot of licensing effort on the part of the pool administrators. The remaining significant mobile-SEP owners are predominantly handset manufacturers who mainly cross-license to reduce royalty out-payments rather than generate royalty income, and so their royalty fee revenues are relatively small. With each percent of royalty yield on total handset revenues now representing more than \$4 billion per year in patent fees, there is insufficient evidence and no justification to conclude that opportunists not included in any of the above categories, including so-called patent trolls, patent-assertion entities and other non-practising entities, yield more than a fraction of a percent of total handset costs.

As a percentage of all consumer charges, including handset costs and \$1.13 trillion in mobile operator services,⁵ which are also highly dependent on SEP technologies, the cumulative royalty yield shrinks to 1.3 percent. Deriving this lower percentage yield figure from the broader revenue base is also applicable because it is the innovative and relatively new SEP-based technologies including 3G HSDPA/HSPA and 4G LTE which enable and drive mobile broadband data service growth. Operator revenues in mobile data services (other than basic SMS text messaging) grew from single-digit percentages of total service revenues until the introduction of HSDPA a decade ago, to around 40 percent across the entire Vodafone Group with many different national operators, for example, in 2015.⁷

Perceptions run high

As the IPR session “Speaker” for the NGMN Alliance’s Industry Conference & Exhibition on 5G in March 2015, Luke Ibbetson, Head of R&D Technology at Vodafone, claimed there is a “perception” that mobile patent royalties are too high. However, he was unable or unwilling to quantify what that means or provide any actual royalty-rate figures when I asked for these in open Q&A.

Last time around, in 4G with LTE towards the end of the previous decade, NGMN concocted a process with a so-called Trusted Third Party “to increase transparency on royalty rates” which

⁵ GSMA Wireless Intelligence

⁷ For example, Vodafone Group’s 2015 Annual Report to March 2015 at page 12 states that “over the last few years the demand for mobile data services, such as watching videos and internet browsing on a smartphone, has accelerated, and today around 40% of revenue is from data, up from around 30% in 2011.”

http://www.vodafone.com/content/dam/vodafone/investors/annual_reports/annual_report_accounts_2003.pdf

According to Vodafone’s 2003 Annual Report at page 33: in the UK, Germany and Italy data [excluding SMS text messaging] accounted for no more than 1% of revenues that year.

http://www.vodafone.com/content/dam/vodafone/investors/annual_reports/annual_report_accounts_2003.pdf

compounds the maximum licensing terms of would-be licensors.⁸ One might expect that to make NGMN very cognizant of licensing rates; but it is widely recognised that aggregating figures in this way is seemingly precise but misleading and defective because it produces severely and nonsensically inflated totals that do not reflect the major factors which substantially reduce rates actually paid, if paid at all.⁹ These shortcomings were inevitable and easily foreseen by licensing experts. I suspect NGMN's TPP process was purposely-conceived to produce such distorted results; so as to put pressure on those who are dependent on licensing income to accept even lower patent fees.

The industry's obsession with "headline" royalty rates and the simple compounding of these has created distorted perceptions on actual licensing costs. There are many other factors which affect how much is actually paid. My royalty yield analysis in this article reflects all these factors. Up-front lump sums can increase the royalty yields above the running-royalty rates charged. Other factors can dramatically reduce (in some cases to zero) the royalty yield achieved by an individual licensor versus maximum rates sought or indicated on rate cards and in public disclosures.

These other factors which tend to reduce rates actually paid include:

- Cross licensing so that licensors who also produce products have freedom to operate as licensees in implementing patented technology owned by other licensors¹⁰
- Prospective licensees negotiating-down the patent fees of some licensors for various other reasons including identification of weak, invalid, not infringed or not essential patents¹¹
- Court rulings which impose significantly lower royalty rates than those requested or paid elsewhere¹²
- Rate caps on devices with relatively high prices such as premium smartphones
- Caps on total royalty fees paid each year or during the entire term of a patent-licensing agreement¹³
- Prospective licensees delaying payments, refusing to pay or threatening not to pay absent litigation
- Difficulties in establishing royalty-generating licenses in jurisdictions with poor patent protection
- Devices selling at higher wholesale prices than those upon which licensing rates are based
- Under-reporting of sales figures (of units or of price) to licensors by handset producers¹⁴

⁸ http://www.ngmn.org/uploads/media/NGMN_Brochure.pdf

⁹ http://ec.europa.eu/competition/consultations/2010_horizontals/ericsson_en.pdf

¹⁰ Cross licensing commonly eliminates patent licensing fees entirely among companies with similar profiles in terms of development and implementation of technologies

¹¹ Some licensors have shown that their SEP licensing agreements are non-discriminatory with terms which are consistent with their publicly-disclosed rates; but this is not universally the case

¹² For example, whereas InterDigital's royalty yield across the entire market is 0.1% as indicated in the next section (so most licensees must be paying at least this figure), a Chinese court awarded it only 0.019% in its litigation with Huawei: http://www.americanbar.org/content/dam/aba/publications/antitrust_law/at315000_tidbits_20130405.authcheckdam.pdf

¹³ Many patent licensing agreements have no volume caps. However, for those that do, it is not uncommon for the effective royalty rate paid to be reduced to a small proportion of the headline rate with larger than expected device sales. For example, if 250 million units are sold after a royalty cap has been set at 50 million units the effective royalty rate will shrink to one fifth the headline royalty rate

On the basis of economic and accounting principles, it is only net royalty payments actually paid, after cross licensing and other reductions, which should be included in cumulative royalty totals.¹⁵ In some cases, paying royalties to access others' technologies can substitute somewhat for investing in R&D oneself. However, patent-licensing payments are separate to R&D costs and should be accounted for separately. It would not be correct to characterise a company spending, for example, 20 percent of its sales revenues on R&D as having a royalty stack of 20 percent plus whatever percentage of sales it also pays out in patent fees to other companies.

Patent licensors can be grouped into four categories. The first of these below includes most mobile-SEP fees paid by licensees:

1. Major mobile SEP owners with significant bilateral licensing income generation

Public disclosures of licensing revenues earned by the most significant mobile SEP developers and licensors clearly and accurately reveal how much licensees are actually paying in total to those companies. The majority of SEP royalties paid, including lump sums and running royalties, are earned by Alcatel-Lucent, Ericsson, InterDigital, Nokia and Qualcomm who each have licensing programs and disclose licensing revenues in their audited accounts and other financial statements. In fact, these figures presented in Figure 2 are conservative indicators of mobile-SEP licensing fees and royalty yields for two reasons. First, their fees also significantly include licensing for other patents including non-SEPs, SEPs for non-cellular standards including WiFi, video and audio compression, and even non-patent licensing with brands and technology transfer in the case of Nokia, for example. Second, whereas licensing fees collected on tablets, PC dongles and M2M devices as well as handsets are included; this over-states yields because these percentages are based only on handset sales revenues (\$377 billion in 2013 and \$410 billion in 2014) rather than the broader revenue base combining sales of all these products.

¹⁴ A recent report by Invotex IP indicated that 87% of audited licensees underreport and underpay royalties <http://nebula.wsimg.com/5edbbeb9790a7f547ecfc3ef42cf398d?AccessKeyId=2ACC09671B2FE74DD41F&disposition=0&allorigin=1>

¹⁵ Elimination of cash costs in this way is indeed the elimination of economic and financial accounting costs. Therefore, any cross-licensing value or cost should also be eliminated from any notional stack of aggregated licensing fees. The associated costs including cross licensing should show up only once in economic and accounting analysis—as R&D expensed by the developer—not twice as expensed R&D plus a notional outgoing licensing fee that is not actually paid in cash, but only paid in kind. A company's R&D expenses can generate patented technology value for it in three ways: for its own products, for cross licensing to access rights to others' patented technologies and to generate cash royalties. In the case of cross licensing, the total cost for the company is no more than its own R&D expense. That pays for it to be able to use its own technology plus the rights to use the technology owned by the counter-party. A manufacturer's R&D expenses fully account for its internal rights to use the technologies developed plus the rights to use the external technologies made accessible as a result of the cross license.

Figure 2: Mobile SEP Licensing Fees Actually Received and Yields for Major Licensors

	2013	2013	2014	2014
millions	Licensing Revenue	Royalty Yield	Licensing Revenue	Royalty Yield
Qualcomm	\$7,878	2.09%	\$7,862	1.92%
Ericsson	\$1,583	0.42%	\$1,480	0.36%
Nokia	\$688	0.18%	\$791	0.19%
InterDigital	\$264	0.07%	\$416	0.10%
Alcatel-Lucent	\$100	0.03%	\$75	0.02%
Total	\$10,513	2.79%	\$10,625	2.59%

Source: Companies' annual reports

These five companies account for the majority of mobile-SEP royalties paid because they:

- Collectively contributed most to the standards and own most of the mobile SEPs
- No longer have downstream device businesses for which freedom to operate in implementation by cross licensing would otherwise prevail over generation of cash royalties¹⁶
- Have the most developed licensing programs seeking and generating cash payments

2. Patent pool licensors

Patent pools for mobile-SEPs collect no more than the equivalent of around one percent of total global handset revenues and probably significantly less than this figure.¹⁷ In comparison to the bilateral licensors detailed above, patent pools tend to license on behalf of licensors who have relatively few mobile SEPs.¹⁸ I have derived prospective maximum royalty yields from the patent fee rates patent pool administrators publicly list and attempt to charge. I have taken market-representative or mid-range tariffs, from the royalty “rate cards” for the three mobile SEP patent pools. These are administered by SIPRO, VIA Licensing and Sisvel.¹⁹ I have also applied a market value weighting which reflects the proportion of mobile device market revenues for handset products including 3G WCDMA (the vast majority) and LTE (still in the minority). There is no significant patent pooling for 2G, 3G CDMA2000 or 3G TD-SCDMA.

Figure 3 provides a very conservative (i.e. a high) assessment of how much money these patent pools collect. I do not have licensing revenue figures for these companies and I do not know how

¹⁶ <http://ipfinance.blogspot.co.uk/2014/11/licensing-mobile-technologies-becomes.html>

¹⁷ One percent of \$410 billion in 2014 handset sales is \$4.1 billion which is an implausibly large mobile SEP licensing revenue total for the three patent pools licensing 3G and 4G technologies and in comparison to the total licensing fees generated by bilateral licensors Alcatel-Lucent, Ericsson, InterDigital, Nokia and Qualcomm, as discussed

¹⁸ <http://ipfinance.blogspot.co.uk/2013/11/absurd-frand-licensing-rate.html>

¹⁹ Licensing charges are presented by the patent pools at <http://www.sipro.com/Licensing-Terms-W-CDMA.html>, <http://www.vialicensing.com/licensecontent.aspx?id=1514> and <http://www.sisvel.com/index.php/latest-news/402-sisvel-expands-the-scope-of-its-lte-patent-pool-h>

effective they are in signing up all the handset suppliers. However, on the highly-optimistic assumption of rate-card prices and all suppliers who implement the applicable technologies actually paying these prices, total mobile-SEP income to these pools would amount to \$4.4 billion in 2014 based on handset sales of \$410 billion. That income figure is unrealistically large given that the WCDMA patent pool is commonly known to have been a very weak performer over many years. Similarly, I doubt if the relatively-new LTE pools are actually collecting as much as a half of what the royalty yields imply because they have not been in business long enough to assert themselves (e.g. in the successful patent enforcement typically required to ensure high licensing rates); nor will they ever likely collect more than three quarters of what the current rate sheets anticipate across the entire handset supply market in the foreseeable future of the next few years.

Figure 3: Patent Pool Typical Licensing Prices and Royalty Yields with Fully Compliant Licensors

	Standard and (Number of licensors in 2015)	2013			2014		
		Average Selling Price or patent fee per device	Market value weighting	Royalty yield	Average Selling Price or patent fee per device	Market value weighting	Royalty yield
Handset ASP		\$204			\$209		
SIPRO fee	WCDMA (14)	\$1.00	85%	0.42%	\$1.00	90%	0.43%
VIA Licensing fee	LTE (13)	\$2.50	25%	0.31%	\$2.50	45%	0.54%
SISVEL fee	LTE (7)	\$0.45	25%	0.05%	\$0.45	45%	0.10%
Total		\$3.95		0.78%	\$3.95		1.07%

Patent pool licensors are identified along with the vast majority of other mobile-SEP owners in the Appendix.

3. Defensive cross licensors

Defensive cross licensors are technology implementers; and so they are inevitably unable to extract large total licensing fees because they have the overriding priority of protecting their downstream devices businesses—in product design, manufacture and sales—from patent infringement challenges. They cross-license instead of seeking to maximise patent fees earned in cash payments. It is not possible to estimate royalty incomes received or demanded so precisely as in the other two licensing categories above. However, it is implausible these few companies with significant numbers of declared-essential patents, including Huawei in China and LG and Samsung in Korea, would be able to command more than the likes of Ericsson and Nokia who have extensive mobile-SEP portfolios from much longer histories as mobile-SEP developers, are now free from the above downstream constraints and have active licensing programs. Apple has similar considerations but has been even less able to monetise, due to a relatively weak position in mobile-SEPs, while being most-highly exposed to infringing others' SEPs due to its large market share. Apple leads the smartphone market neck-to-neck with Samsung in terms of value share.

Samsung provides a striking and significant example of how patent fees paid are most likely nowhere near as much as they are purported to be despite the fact that it appears to have a substantial trove

of mobile-SEPs. Whereas Samsung sought a handset-based “headline” royalty rate of 2.4 percent from Apple,²⁰ it is inconceivable anywhere near that figure is being paid. With counter-claims of Samsung infringing Apple’s patents and a settlement for all litigation outside the US,²¹ net royalty payments paid including court-awarded damages are unlikely ever to be anywhere near that percentage. Apple fought tooth and nail in litigation to challenge Samsung’s SEP licensing demands.²² Even damages of nearly one billion dollars—awarded to Apple for non-SEP and trade dress infringements by Samsung²³—amount to less than 0.25 percent of one year’s handset sales. No such awards were made to Samsung for any mobile-SEP infringement by Apple. And, of course, no royalty is being paid to Samsung on sales of its own devices. Samsung incurs R&D costs, as it reports to be 7.0 percent of its 2014 sales; but it does not then charge itself license fees to use its own patented technologies. If no net patent fees are being paid to Samsung by these first and second largest handset suppliers, who account for 64 percent of the handset industry’s sales by value in 2013, even in the highly-unlikely circumstances of every other handset supplier paying Samsung royalties at that same 2.4 percent headline rate, Samsung’s royalty yield on the entire market would only amount to 0.9 percent.²⁴

4. Opportunists and others

There are several more companies who apparently own or have owned mobile SEPs; but even collectively these are very unlikely to yield more in licensing income than a fraction of one percent of total handset sales revenues. Names, including number of patents declared essential to LTE out of a total of 1,941 in a 2010 study, include Icera (1) which is now owned by NVIDIA, iCODING (1), Infineon (2) which is now owned by Intel, IPR Licensing Inc (4), Texas Instruments (26) and VoiceAge (6) are also included in the Appendix.²⁵ Also among these, Motorola (16) which was acquired by Google is of particular significance. The portfolio of SEPs Google obtained in the process have been litigated very aggressively—notably against Microsoft—but this was focused on WiFi and video codec SEPs and did not include mobile SEPs. The court’s royalty-rate determination was less than one hundredth the 2.25 percent royalty rate demanded.²⁶ Google is licensing its LTE patents through Via Licensing’s patent pool which means Google’s royalty yield there will be rather small given that it is only one among 13 licensors sharing cash proceeds after netting off charges among these. Reportedly, Motorola has historically charged some licensees significant royalties for mobile SEPs;²⁷ but that was largely due to its position in 2G technologies with standardization mostly in the 1980s and early 1990s. Most patents on these have expired with unexpired patents in enhancements such as GPRS.

IPCom made itself infamous as a non-practising entity with its attempts to extract royalties on a portfolio of mobile-SEPs acquired from Robert Bosch and others. It has made multi-billion dollar infringement claims against Apple, Nokia, HTC and others; but there is no evidence of payments at anything like those levels. In several cases, courts have found patents not infringed. On an

²⁰ In litigation with Apple at the U.S. International Trade Commission

http://www.usitc.gov/press_room/documents/337_794_ID.pdf

²¹ <http://www.cnet.com/news/apple-wins-and-loses-in-appeal-of-samsung-patent-verdict/>

²² <http://www.essentialpatentblog.com/lawsuit/apple-v-samsung/>

²³ <http://www.cnet.com/news/apple-wins-and-loses-in-appeal-of-samsung-patent-verdict/>

²⁴ $(100\% - 64\%) \times 2.4\% = 0.864\%$

²⁵ <http://www.investorvillage.com/uploads/82827/files/LESI-Royalty-Rates.pdf>

²⁶ <http://ipfinance.blogspot.co.uk/2013/11/absurd-frand-licensing-rate.html>

²⁷ http://ec.europa.eu/competition/antitrust/cases/dec_docs/39985/39985_928_16.pdf

annualized basis, in comparison to ICom's striking one-off demands, there have been no significant court damages awards and there is no evidence of major payments in settlements.²⁸

On average, so-called patent trolls, patent-assertion entities and other non-practising entities add no more than a fraction of a percent to total handset costs. Each percent of royalty yield on \$410 billion total handset revenues represents more than \$4 billion per year in patent fees. The top five licensees with the majority of mobile SEPs and established licensing programs collect a total of only \$10.6 billion which represents a yield of only 2.6 percent. ICom is outstanding, if not unique as a PAE in mobile SEPs. However, there is no justification let alone evidence to conclude that either it alone or in aggregate with similar entities are collecting more than a small proportion of total patent fees paid for mobile SEPs.

Royalties less than "perceived," but are they low enough?

Overall mobile-SEP licensing costs are nowhere near as large or significant versus total costs as is commonly alleged or perceived. Total 2014 mobile-SEP costs in Category 1 (of major licensors with most mobile-SEPs, no handset businesses and active licensing programs) are conservatively \$10.6 billion because the figure includes some non-mobile-SEP licensing. I have made conservatively very large estimates for Category 2 (patent pools). There is no evidence and it is implausible that mobile-SEP patent fees paid in Category 3 (cross licensors with handset businesses to protect) and Category 4 (others including NPEs and PAEs) combined would be even as much as half the \$10.6 billion I have determined for Category 1. However, with the dearth of public information about payments to Category 3 and 4 licensors, I have logically and also conservatively estimated additional combined royalties of up to \$6 billion per year for these two categories.

Royalties paid are also fair, reasonable and justified. The five Category 1 companies spent the considerably larger sum of \$17.2 billion on R&D, corresponding to 17.8% of their revenues,²⁹ than the \$10.6 billion they earned in licensing fees last year. In contrast, major smartphone implementers Apple, Samsung, Huawei, RIM, LG and ZTE - who are most-highly dependent on the Category 1s for mobile-standard-essential technologies spent on average only 5.8% of their revenues on R&D.³⁰ Royalty payments are thus a vital contribution and recompense for the R&D Category 1 companies, in particular, do for the benefit of all. These other companies are consequently able to get away with significantly lower R&D expenditures and focus these on development of products rather than on mobile-SEP technologies themselves.

Other patents

The focus of this article was mobile SEPs; but other patent fees collectively increase the total royalty yield by no more than a relatively small percentage. This is for all the same factors that applied with mobile SEPs, as bulleted previously, and as explained below. The following analysis is illustrative, in contrast to the more exhaustive analysis above for mobile SEPs. As indicated, much of the company-reported licensing fees above include licensing of non-mobile SEPs and non SEPs. Some other major standards also have very low rates. For example, H.264 video is licensed by a patent pool including

²⁸ <http://ipkitten.blogspot.co.uk/2015/05/ipcom-v-htc-in-patents-court-judge.html>,
<http://www.fosspatents.com/2014/02/ipcoms-22-billion-lawsuit-against-apple.html>

²⁹ Companies' annual reports

³⁰ Companies' annual reports

Keith Mallinson, WiseHarbor, on cumulative mobile-SEP royalties. For IP Finance, 19th August 2015

the vast majority of applicable SEPs for no more than \$0.20 per device – that is less than 0.1 percent of a \$250 smartphone cost.³¹ Court determinations in litigation over WiFi and H.264 patents between Motorola and Microsoft also suggest that low rates prevail.³²

In 2013, Microsoft was notoriously able to extract a seemingly-large \$1 billion licensing fee from smartphone market leader Samsung for non-SEPs reading on its Android operating system implementations.³³ This was a high watermark and the agreement between the companies also included a requirement that Samsung develop smartphones based on Microsoft's Windows Phone software. Samsung litigated to reduce payments. Microsoft had 26 other licensees and it claimed 80 percent of Android smartphone sales in the US were licensed. It seems unlikely based on market shares and other factors—such as the fact that Microsoft and Samsung had this significant, but foundering, collaboration in smartphones based on Windows Phone software—that Microsoft would have received more than a total of very approximately \$2 billion per year for such payments from all licensees.³⁴ This is a lot of money, but equivalent only to about 0.5 percent on the cumulative smartphone royalty yield on total market sales.

The most headlining-grabbing case ever of an NPE commanding a large royalty fee from a smartphone manufacturer was when NTP received \$613 million payment from RIM (BlackBerry) for settlement of non-SEP infringement litigation.³⁵ That was an exceptional case and a one-off a long time ago in 2006. The payment is also relatively small in comparison to \$410 billion in handset revenues annually in 2014 and given the enormous amount of attention it has attracted.

Non-SEPs together with SEPs can even reduce total licensing costs including SEPs and non-SEPs. As illustrated in litigation between Apple and Samsung, parties litigated and negotiated settlement on the basis of their respective strengths in SEPs and non-SEPs. Whatever payments were agreed in settlement or will be set in future settlements or court rulings will be result of some netting off between SEPs and non-SEPs, and between the two parties.

Realistic rates

Realistic and unbiased estimates can only be made with thorough empirical analysis of what is actually being paid, and, where that information is not available; assessments of how much would realistically be paid given various factors which significantly reduce rates below what is demanded.

It is not possible to estimate cumulative royalties with great accuracy. In the absence of any reasoned assessments, biased perceptions have been formed from propagation of royalty-stacking and hold-up theories, and from NGMN's "trusted third party" process simply adding up maximum rates. The impossibility of making very accurate assessments is no justification to bias estimates upward based on theories without empirical support or spuriously precise but unrepresentative calculations.

³¹ <http://www.mpegla.com/main/programs/avc/Documents/avcweb.pdf>

³² <http://www.essentialpatentblog.com/2013/04/microsoft-motorola-update-washington-court-sets-rand-royalty-for-motorola-802-11-and-h-264-patent-portfolios/>

³³ <http://www.wsj.com/articles/samsung-paid-microsoft-1-billions-last-year-for-android-phone-royalty-court-filing-says-1412382330>

³⁴ <http://www.computerworld.com/article/2475440/android/microsoft-gets--2-billion-a-year-in-android-patent-fees--really-.html>

³⁵ http://money.cnn.com/2006/03/03/technology/rimm_ntp/

The majority of the cumulative royalty figure can be determined reasonably accurately and conservatively from major licensors' disclosures and patent pool rate cards respectively. Uncertainties and potential inaccuracies in my estimates are largely with those who are most inclined to minimise out-payments through cross licensing and with smaller licensors. My bottom-line totals have modest but acceptable accuracy on basis that the major licensors who disclose licensing income evidently receive significantly more in royalty payments than those in other categories.

One should be wary of inadequately-substantiated claims of excessive SEP royalties. For example, Apple and those very same Chinese and Korean companies described above, appear most hell-bent on reducing patent fees, if and when it suits them. Some manufacturers and mobile operators scaremonger like this, sometimes in cahoots with their respective antitrust agencies, to improve their relative positions – particularly against those who have exited the handset business and are therefore so very dependent on licensing fees to fund ongoing R&D.³⁶ Despite all this fuss, no manufacturer or other party seeking to reduce its royalty costs has yet tried to prove in court the total amount of the alleged “royalty stack” for mobile SEPs. That is no surprise. Under scrutiny of legal process including evidentiary requirements they would surely fail to prove “too high” cumulative royalty rates, as purportedly “perceived.”

³⁶ <http://ipfinance.blogspot.co.uk/2014/11/licensing-mobile-technologies-becomes.html>

Appendix: Mobile SEP Owner-Licensors (Based on Stasik Report List, 2010*)

	Declared Essential LTE Patents*	Published LTE Handset Royalty Rate*	Bilateral income reported	Sipro WCDMA Pool	Via LTE Pool	Sisvel LTE Pool	Income unknown
Alcatel-Lucent	9	2.00%	x				
Apple							x
AT&T	1			x	x		
Ericsson	146	1.50%	x				
ETRI	35					x	
France Telecom	3						x
Freescale Semi	1						x
Gemplus	1						x
HP	1				x		
Huawei	182	1.50%					x
Icera	1						x
iCODING	1						x
Infineon	2						x
InterDigital Technology Corp	282		x				
InterDigital Patent Holdings	155		x				
IPR Licensing Inc	4						x
LG Electronics	150						x
Motorola (Google)	16	2.25%			x		
NEC	19			x			
NextWave Wireless							
Nokia Corp	142	1.50%	x				
Nokia Siemens Networks	32	0.80%	x				
Nortel Networks ³⁷	46	1.00%					
NTT DoCoMo	78			x	x		
Panasonic	39			x			
Qualcomm	350	3.25%	x				
RIM/BlackBerry							x
Samsung	170						x
Siemens	11			x			
Sony	12						
Sony-Ericsson							
Texas Instruments	26						x
TDF	3					x	
T-Mobile Deutschland GmbH	12						
T-Mobile International AG	5				x		
Vodafone		0% ³⁸					
VoiceAge	6						x
ZTE		1.00%			x		
Sub total	1,941	14.80%					

³⁷ Nortel patents sold to Rockstar consortium, and then 4,000 of them sold on to RPX ostensibly for defensive purposes. <http://www.wsj.com/articles/rockstar-consortium-to-sell-4-000-patents-to-rpx-corp-for-900-million-1419345685>

³⁸ Public disclosure by Vodafone. Link no longer available

Appendix (continued): Mobile SEP Owner-Licensors (others)

	Number of Declared Essential LTE Patents (Stasik 2010)	Published LTE Handset Royalty Rate (Stasik 2010)	Bilateral income reported	Sipro WCDMA Pool	Via LTE Pool	Sisvel LTE Pool	Income unknown
Fujitsu				x			
Koninklijke KPN				x		x	
Mitsubishi				x			
Newracom Inc				x			
NTT				x			
Orange				x		x	
Sharp				x			
Sk Telecom				x	x		
Toshiba				x			
China Mobile					x		
Clear Wireless					x		
DTVG Licensing					x		
KDDI					x		
Telecom Italia					x		
Telefonica					x		
Airbus DS						x	
Brau Verwaltungsgesellschaft mbH						x	
China Academy of Telecommunications Research						x	

Keith Mallinson, WiseHarbor, on cumulative mobile-SEP royalties. For IP Finance, 19th August 2015

About this article, the author and WiseHarbor

This article was originally published in the IP Finance blog on 19th August 2015.

[Keith Mallinson](#) is founder of [WiseHarbor](#), providing expert commercial consultancy since 2007 to technology and service businesses in wired and wireless telecommunications, media and entertainment serving consumer and professional markets. He is an industry expert and consultant with 25 years experience and extensive knowledge of the ICT industries and markets, including the IP-rich 2G/3G/4G mobile communications sector. His clients include Qualcomm and several other major companies in ICT. He is often engaged as a testifying expert witness in patent licensing agreement disputes and in other litigation including asset valuations, damages assessments and in antitrust cases. He is also a [regular columnist](#) with [FierceWireless](#) and IP Finance – “where money issues meet intellectual property rights.”

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