



The submissions of
Hong Kong CSL Limited and New World PCS Limited
in response to the consultation paper released on 27 October
2006 by the Telecommunications Authority on:
“Licensing of Spectrum in the 850MHz Band to Enable the
Provision of CDMA2000 Service”

26 December 2006

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1 Submission

1.1 Hong Kong CSL Limited and New World PCS Limited (the “**CSL & NWM Group**”), are pleased to provide comments in response to the Consultation Paper.

2 Summary

2.1 In summary, the CSL & NWM Group strongly believes that:

- the proposal to auction the Spectrum represents an about face by the TA regarding his stated assurances to the telecommunications industry;
- the TA should refrain from making ANY decisions regarding Spectrum in Hong Kong until such time as the Spectrum Policy Review is concluded and an appropriate Spectrum Policy is implemented; and
- there is no need for the introduction of a further MNO Licensee into the market or the release of the Spectrum.

3 Regulatory Uncertainty

3.1 It is a fact that the TA has previously advised that a Spectrum Policy Review has to be undertaken prior to tackling the CDMA question. In 2004 the TA stated:

“41. The TA therefore considers that there is no urgency in introducing a new system operating in the spectrum vacated by the existing IS-95 CDMA system. Further study to be undertaken as part of the spectrum policy review described in the following paragraph has to be conducted before a decision is made on whether and if so, when and how the vacated spectrum should be licensed for the operation of a new system.

42. The Government intends to initiate a separate spectrum policy review on the allocation and assignment of radio spectrum for telecommunications and related services. In the light of the outcome of the review, the Government will initiate the

necessary legislative and administrative procedures to implement the revised spectrum policy. The TA will then determine the way forward for the allocation and assignment of the spectrum vacated by the existing IS-95 CDMA system and other available spectrum for mobile and other telecommunications services. If any operators or parties have any plan to use the spectrum for the deployment of advanced mobile networks, they may submit their proposals to the Government during the spectrum policy review. The Government will consider such proposals in the context of the policy review.”¹

- 3.2 It is a fact that the Consultation Paper represents a reversal of the previously stated position of the TA and that such action by the TA represents regulatory uncertainty.
- 3.3 The TA, in our experience, rarely makes such unequivocal statements as quoted above, preferring instead to use a less interventionist approach to public statements. When industry participants read such firm statements, decisions about the direction of investments and other crucial decision are made. The Consultation Paper represents a complete turnaround from the stated position of the TA with regard to both CDMA and the Spectrum Policy Review. Such action creates an environment of regulatory uncertainty. It is not necessary to detail here exactly the effects that regulatory uncertainty will have on the Hong Kong telecommunications sector (as we trust that the TA will not be minded to act so as to create regulatory uncertainty) other than to say, it is difficult for industry decision makers to agree to invest in an uncertain environment.
- 3.4 If the TA is minded to reverse his policy with respect to CDMA, we are now left in the unenviable position of having to make investment decisions in relation to other issues in an environment that could change without notice.

4 Peremptory issue of CDMA2000 Licence

- 4.1 The TA should not release the Spectrum or make available a new CDMA licence.
- 4.2 The CSL & NWM Group believes that prior to making the Spectrum available to the market, the TA should await the outcome of the Spectrum Policy Review and the finalisation of the Fixed Mobile Convergence Consultation Process. Failure to wait

¹ Paragraphs 41 & 42 of the Statement of the TA on Licensing of Mobile Services on Expiry of Existing Licenses for Second Generation Mobile Services issued on 29 November 2004.

until these processes are concluded is akin to putting practices into place without a cohesive policy which of course is certain to lead to the creation of problems within the industry that will only need to be fixed by the TA in the future.

- 4.3 The rationale behind this belief is that it would be premature to decide whether the best available use of the Spectrum is for it to be taken up by a CDMA2000 licensee, without first formulating an appropriate Spectrum Policy. Effectively, what the TA could be doing (by conducting this process), is creating a new problem which must (along with other existing challenges) be addressed by the Spectrum Policy.
- 4.4 With the issues surrounding the TA's handling of BWA, our perception is that the TA is, similar to BWA, taking his own course with regard to making the Spectrum available to the market prior to the conclusion of the Spectrum Policy Review.
- 4.5 The proposal to auction the Spectrum now advocated by OFTA is inconsistent with the policy first approach:

"No emergency or exceptional circumstances exist to justify a departure from the logical sequencing of consultations and decisions. On the contrary, decisions which are out of sequence will have a substantial negative effect on users. For example, doing things in the wrong order will act to create significant regulatory uncertainty as the BWA decision would be subject to change in the light of the subsequent final decisions made in the FMC Consultation and SPR. That is, BWA would be going forward without critically relevant decisions made as to interference issues, spectrum allocation, spectrum use, spectrum trading, technology adoption, interconnection, numbering, etc."²

- 4.6 Additionally, as previously stated, we are of the opinion that regulatory uncertainties are not conducive to investment, and innovation, indeed, the TA's own statement supports this view:

"Taken together, these will suppress the benefits sought by OFTA via its "implementation first" approach. Hesitancy among bidders will also produce a lower auction price, which the Government should find of concern. At the end of the day, fewer benefits will be realized and indeed it will be seen that the Policy First approach should have been followed as this would have produced more sustainable benefits to users."

² Joint Operator Submission to TA dated 21 November 2005: http://www.ofta.gov.hk/en/report-paper-guide/paper/consultation/20051125_2/19.pdf

Indeed, a Policy First approach would cause little or no delay (as apparently feared by OFTA) but will ensure user benefits.”³

- 4.7 In the event that the TA is set on creating regulatory uncertainty it is our opinion that the mobile telephony market of Hong Kong, which is already operating under the burden of a myriad of anti-competitive Asymmetries, would be severely affected by the introduction of (potentially) a further MNO licensee as:

“Hong Kong’s emphasis on the promotion of competition in the mobile sector has resulted in substantial competitive pressures and ensured the effectiveness of competition in the sector. It is the most competitive market among the review market.”⁴

- 4.8 The introduction of an additional MNO licensee could effectively reduce the funds available to existing licensees for operational and capital expenditure resulting in less investment in network, fewer ‘new to market’ product offerings as existing participants strive to survive in a market which already has the low prices and extremely narrow margins:

“Hong Kong’s mobile-telephone industry is already the world’s most competitive—with six operators fighting for a stake in a population of 7m... Price competition among the six mobile operators has been intense, and by June 2004 there were 7.6m mobile service subscribers, representing a penetration rate of 111.5%”⁵

- 4.9 The TA has also acknowledged the competitive nature of the market:

“Moreover, even if PCCW were able to have entered the mobile market using a newly created licence or as an MVNO and therefore increase the number of competitors by one, it is difficult to see how its entry could significantly improve the generally acknowledged intense competition between the 6 pre-existing mobile phone operators and 7 current MVNOs.”⁶

³ Ibid.

⁴ Spectrum Strategy Consultants, ‘The Competitiveness of Hong Kong’s telecommunications industry’, p. 20, <http://www.ofta.gov.hk/en/report-paper-guide/report/rp20030620.pdf>.

⁵ The Economist Intelligence Unit report on Hong Kong, October 2004.

⁶ TA’s Report on the Competition Impact of the Acquisition of Shares in Sunday by PCCW, paragraph 6.23.

4.10 The TA has also commissioned a report⁷ in 2004 that supports our view of the competitive nature of the market and the fact that no real need exists for the introduction of the further licensee:

“The business case for any W-CDMA 3G operator in the market is marginal and highly dependent on market share, thus there is a negative impact on incumbents if there is a new entrant to the market.”⁸

4.11 Additionally, the introduction of a new MNO licensee for the purposes of allowing CDMA2000 subscribers to roam into Hong Kong is not, in our view, necessary given that the global trend with respect to CDMA2000 is that most countries are opting out (e.g. Australia) of using this technology.

4.12 Furthermore, to auction the Spectrum for the sole purpose of providing for roammers from China is predicated on the assumption that China roammers are utilising CDMA technology. This is factually incorrect, for example, China Unicom has been offering dual mode (CDMA and GSM) handsets and services since August 2004⁹ and we understand has recently made a large purchase of CDMA-GSM dual mode handsets from China Wireless Technologies¹⁰. Telecom New Zealand has also recently (11 September 2006) introduced a dual mode CDMA/GSM Samsung W531 handset.¹¹ It follows that customers from mainland China who are regular roammers would avail themselves of such services, hence negating the TA’s stated objective of allowing such customers to utilise mobile phone services whilst in Hong Kong.

4.13 Whilst the TA has stated that he proposes to auction the Spectrum because there is a ‘need for continuity of the CDMA service’ which anecdotally is given as being necessary to ‘strengthen our position as a telecommunications hub’, ‘as a world city’ and the ‘gateway’ to China. However, the Consultation Paper does not offer any evidence or explanation as to why such a conclusion has been drawn by the TA.

4.14 The CSL & NWM Group does not agree with Proposal 1.

⁷ OFTA’s Report for the Public, Study on the Hong Kong mobile market for 2G licence renewal: Prospect for a new mobile licence in the 800MHz spectrum band, November 2004, p. 17:
http://www.ofta.gov.hk/en/report-paper-guide/report/rp20041129_2.pdf

⁸ Ibid.

⁹ People’s Online Daily, http://english.peopledaily.com.cn/200408/06/eng20040806_152072.html, 6 August 2004.

¹⁰ South China Morning Post, “China Wireless seals 460M Yuan deal with Unicom”, 1 November 2006, B3.

¹¹ Cf. http://www.telecom-media.co.nz/releases_detail.asp?id=3355&page=6&pagesize=10&filtertext=&m1=1&y1=1996&m2=12&y2=2006&filter=filter

4.15 Whilst the CSL & NWM Group does not agree with the introduction of a CDMA2000 licensee into the market, it takes this opportunity to respond to the other proposals of the TA in the Consultation Paper, however the comments should not be construed as the CSL & NWM Group agreeing with, or providing tacit acceptance of, the issuing of a CDMA2000 licence.

5 The Auction Process

- 5.1 In response to Proposal 2, in the event that the TA insists on ignoring his previously stated position by making the CDMA2000 licence available, we are of the view that any auction that is conducted for the CDMA2000 licence should be identical to that conducted by the TA for the licensing of 3G services in 2001.
- 5.2 Additionally, the auction process proposed by the TA is flawed in that in the event that the highest bidder fails to ‘take up’ the license, he proposed to then make the license available to the next highest bidder. The flaw in this process is that other market participants (i.e. the third and fourth bidder) might be in a position to bid (for a myriad of reasons), an amount in excess of that bid by the second bidder. Accordingly, in the event that the highest bidder does not take up the license, the auction process should be recommenced.
- 5.3 The CSL & NWM Group agrees with Proposal 6.

6 Auction Reserve Price

- 6.1 In response to Proposal 6, we believe that the reserve should be set at exactly the same level as was paid by the existing licensees during the auction of 3G spectrum under the 2001 auction process.
- 6.2 The rationale behind this belief is that the auction price, which will not be set by the market, but by the TA or another one or more Government agencies, must be at a comparative level to that paid by existing 3G licensees otherwise the result will be a competitive advantage for the incoming licensee over the existing 3G licensees derived from the existence of this TA created cost base as to do otherwise will create an unlevel playing field between the existing 3G licensees and the new entrant.

- 6.3 We are concerned that a possible ‘pre-determination’ issue by the TA has arisen with respect to the proposed licence. This concern arises from the statements attributed to OFTA in the *South China Morning Post* (“SCMP”) on 12 December 2006:

“Mr Chan said the government will appoint an independent consultant to set the reserve price for the new licence which will be paid for in a one-off lump-sum payment.”

- 6.4 Additionally, we are concerned that the appointment of a consultant to determine the reserve auction price can be construed as the TA disregarding the views of the Consultation Paper respondents as the TA did not advise that such a consultant would be appointed in the said paper and nor has he indicated what weight will be given to the opinion of the consultant in comparison to the opinion of the respondents.
- 6.5 We were under the impression that the purpose of this consultation process was to solicit the views of interested parties with a view to determining the TA’s proposed course of action, yet it would appear from the statement above that OFTA has predetermined this issue.

- 6.6 The SCMP also reports that:

“The reserve price should be made in reference to the level set in the last 3G auction in 2001 but adjustments are to be made to take into account the change in the market and the perceived change in 3G spectrum value after the burst of the IT bubble in 2001,’Ofta said.”

- 6.7 This quotation appears to attribute the level of the reserve price to market conditions; however, the TA is no doubt aware that it was the Government who set the 3G reserve auction price, which of course is far removed from it being market based.
- 6.8 In the event that the TA decides to pursue his ‘pre-determination’ of the auction reserve price, we would suggest that the TA review the current licencing system imposed on current 3G licence holders to bring those conditions into line with the CDMA2000 licence conditions. The most important change being the reduction of the SUF paid by 3G licensees to the levels contemplated for the CDMA2000 licensee.

6.9

- 6.10 Furthermore, it would appear from the Consultation Paper that OFTA has chosen to diverge from the four principles that it advocated in 2004 as set out in the report of its consultant Spectrum¹², those views are summarized in the extracted table below:

Spectrum and OFTA agreed on a set of principles to follow in assessing SUF models

Principle	Rationale
1) Fair compensation for use of public resources	<ul style="list-style-type: none"> Share risk as well as the potential benefits among all stakeholders
2) Level playing field	<ul style="list-style-type: none"> Avoiding putting any one player at an unfair advantage Eliminate legacy inconsistencies (free spectrum and uneven allocation of bandwidth) and harmonize with 3G SUF
3) SUF proportional to bandwidth	<ul style="list-style-type: none"> Encourage efficient use of spectrum No price discrimination
4) Technology neutrality	<ul style="list-style-type: none"> Uphold OFTA's policy principle of technology neutrality Convergent technologies over time

- 6.11 We note that the TA has indicated in the SCMP article that '*adjustments are to be made to take into account the change in the market and the perceived change in 3G spectrum value after the burst of the IT bubble in 2001*'. Attached to this submission as Table A¹³ is a table sourced from the Federal Communications Commission ("FCC") and the U.S. Census Bureau showing recent auction results of spectrum from the United States of America ("USA") in October 2006. Analysis of this table reveals that the prices being paid by operators in the USA are far from small and in fact evidence that the prices being paid for spectrum are similar to those being paid during the so called 'IT bubble'.

- 6.12 The table shows that prices for similar 20 MHz blocks of spectrum in the USA covering broadly similar markets ranged from approximately \$0.45 to \$1.55 per person per MHz. (The table also includes 10 MHz licences for relevant markets but the prices per MHz of such licences is not substantially different.) On this basis, a 20 MHz license in Hong Kong might be worth as much as approximately US\$215 million although the range of plausible prices based solely on the most recent U.S. auction runs from approximately US\$63 million to US\$215 million. However, it is worth noting that the average price for a 20 MHz block of spectrum in the most directly comparable markets -- New York,

¹² Report for the Public by OFTA, Spectrum Utilisation Fee (SUF) for 2G Spectrum: Licensing of Mobile Services on Expiry of Existing 2G Licenses, November 2004.

Chicago and Philadelphia -- was US\$1.03 per person per MHz which suggests a US\$145 million value, approximately, for a like block of spectrum in Hong Kong.

- 6.13 At this time we do not feel it is necessary to provide a quantitative analysis of the population, engineering, market structure and other factors that may cause spectrum prices in Hong Kong and the USA to diverge. However, the following factors should be taken into account in using recent USA spectrum prices to benchmark any future 850 MHz licence in Hong Kong.
- 6.14 First, the 1.7/2.1 GHz band spectrum auctioned in the USA has notably different propagation characteristics than spectrum in the 850 MHz band. This may make spectrum in the 1.7/2.1 band cheaper because, as compared to the 850 MHz band, a 2 GHz mobile service network is likely to be more costly to build because it will typically require significantly smaller cell sizes and a correspondingly greater number of network switches and base stations. The USA 2 GHz spectrum is also encumbered, in part, and cannot be used until incumbent government users are relocated in 2007-2008. This factor may also have reduced bid prices for the USA spectrum blocks.
- 6.15 Second, no USA mobile market is as densely populated, on average, as Hong Kong. Indeed, only the New York Cellular Market Area begins to approach the density of Hong Kong and even then, the average density is only about one quarter that of Hong Kong. The other most comparable markets in population size (Chicago and Philadelphia) have densities that are approximately 15% or less of that in Hong Kong. This factor also is likely to lead to lower per capita spectrum prices vis-à-vis Hong Kong for major urban USA mobile licences.
- 6.16 Third, the spectrum prices realised in the last FCC mobile auction were almost certainly held down by the significant overhang of mobile wireless spectrum coming to auction in 2008 as well as the large inventory of broadband wireless spectrum currently held by potential competitors. Notably, the FCC has announced plans to auction 60 MHz of 700 MHz band spectrum in January 2008. This block will likely add another four (or more) mobile service licenses in each market area on top of the six licenses auctioned in October 2006. In addition, competitive land mobile services may be provided in the future over 2.3 GHz and 2.5 GHz spectrum held by AT&T, Clearwire and Bell South. In addition, two mobile satellite companies each hold 20 MHz of 2 GHz spectrum

¹³ Note: We are able to provide the TA with further information from our US regulatory experts if requested.

nationwide which, under liberal FCC licensing rules, can be used for terrestrial mobile service.

7 Spectrum Utilisation Fee

- 7.1 The CSL & NWM Group does not agree with Proposal 4.
- 7.2 It is our firm belief that the SUF should be identical to that which is paid by other 3G MNO Licensees. This belief is founded on the logically drawn conclusion which is that if the incoming licensee is going to compete for customers with existing 3G licensees then they should do so from the same costs base or ‘level playing field’. Both the SUF and the auction reserve price must (in the interest of creating a level playing field) match those currently paid by existing 3G MNO Licensees.
- 7.3 If the TA is not minded to create a level playing field between the existing 3G SUF and the potential incoming CDMA2000 licensee and whilst we acknowledge that it is not within the power of the TA to immediately remove the SUF, it is within the power of the TA to support and move for such an initiative with the government.

8 Open Network Access

- 8.1 The CSL & NWM Group agrees with Proposal 7.
- 8.2 It is our contention that this requirement can be withdrawn immediately and that it is not necessary for the TA to wait for the outcome of the Spectrum Policy Review, nor the finalisation of this consultation process in order to give effect to the removal of the ONA licence conditions currently imposed on 2G and 3G MNO Licensees.
- 8.3 Section 7A of the Ordinance (which has been in place since before the 3G auction process) provides the TA with the power to remove these conditions immediately:

“The Authority may attach special conditions, consistent with this Ordinance and not inconsistent with the prescribed general conditions, to a licence he is empowered to issue, including special conditions on a carrier licence in addition to the prescribed general conditions and which special conditions are to be interpreted subject to the prescribed general conditions”

- 8.4 Generally speaking (and a view supported by the TA), the trend for regulators on a worldwide basis has been towards less rather than more regulation. With this in mind

and coupled with the competitive nature of the 2G / reseller and MVNO market (where ONA is not required), we believe that the 3G market is moving towards (if not already there) the same level of competition which in effect removes the need for this regulator interference in the market.

9 Licence Conditions

- 9.1 With respect to Proposal 8, we are of the opinion that the licence conditions imposed upon the new licensee must be aligned with the licence conditions imposed on the existing 3G licensees. Failure to do so will result in a competitive advantage being created by the TA for the new licensee. Such competitive favoritism is not appropriate.
- 9.2 In relation to paragraph 65 of the Consultation Paper, we note that the TA is proposing to impose coverage requirements on the incoming licensee at ‘strategic locations’ such as the MTR, KCRC and Airport Authority. We question how it is that the TA intends to impose such coverage requirements on the new licensee given that it does not exercise power over those parties. If it is the case that it is the intention of the TA to allow the new licensee to have land access rights to those sites without the consent of the landlord then we would assume that such rights (in the interests of maintaining the level playing field) will be extended to existing 2G and 3G MNO Licensees.

10 Interpretation

A reference to “we” or “our” includes a reference to the CSL & NWM Group.

Asymmetries means any asymmetry/ies described in the FMC Consultant’s Report.

Consultation Paper means the document released by the TA on 27 October 2006 entitled *‘Licensing of Spectrum in the 850 MHz Band to Enable the Provision of CDMA2000 Service’*.

Fixed Mobile Convergence Consultation Process means the consultation process currently being conducted by the TA in relation to fixed mobile convergence.

FMC Consultant’s Report means the report entitled *Review of the Regulatory Framework for Fixed-Mobile Convergence in Hong Kong* prepared by Ovum Limited and dated 14 July 2006.

Hong Kong means the Hong Kong Special Administrative Region of the People’s Republic of China.

MNO means a Mobile Network Operator.

MNO Licensee means an MNO that holds a licence to provide public mobile telecommunications services within Hong Kong.

MVNO means and Mobile Virtual Network Operator.

OFTA means the Office of the Telecommunications Authority.

ONA means Open Network Access.

Ordinance means the Telecommunications Ordinance Cap. 106 of Hong Kong

Spectrum means the radio frequency spectrum block from 825 to 835 MHz paired with 870 to 880 MHz that is proposed to be auctioned by the TA.

Spectrum Policy means the policy arising from the Spectrum Policy Review.

Spectrum Policy Review means the review currently being undertaken by the Communications and Technology Branch of the Commerce, Industry and Technology Bureau of the Government of Hong Kong.

SUF means Spectrum Utilisation Fee.

TA means the Telecommunications Authority.

11 Disclaimer

- 11.1 This submission, in its entirety, is not to be construed by the TA as being an acceptance by the CSL & NWM Group of the proposal to release the Spectrum to the market.

12 Confidentiality

The CSL & NWM Group does not regard any part of this submission as confidential and has no objection to it being published or disclosed to third parties, however, this submission in its entirety is made on the basis that it is **without prejudice** to the rights of CSL & NWM Group and its associated corporate entities.

-END-

Annex 1

The Proposals

Proposal 1: the TA should make available to the market spectrum which enables the provision of a CDMA2000 mobile service after 20 November 2008.

Proposal 2: Auction should be used to determine to whom the spectrum released should be assigned.

Proposal 3: The proposed band plan in the 850 MHz band as depicted in Figure 3 should be adopted. While the frequency block from 825 to 835 MHz paired with 870 to 880 MHz may be made available to enable the provision of a CDMA2000 mobile service, views on the optimal amount of

Proposal 4: The use of spectrum by the licensee should be subject to the payment of one-off SUF the amount of which will be determined through open auction.

Proposal 5: It is proposed that a simple MRAA should be adopted in the licensing the relevant frequency block. Bidders should place open bids in multiples of the bid price increment, starting from the reserve price. Both the reserve price and the bid price increment will be announced Government nearer the time of the auction. The details of the auction process will be published in due course.

Proposal 6: Incumbent 2G and 3G licensees should be permitted to take part in the open auction for spectrum in the relevant frequency block provided that they meet the pre-qualification requirements. In this exercise, there will not be any bidding restriction in the form of a spectrum cap i.e. an upper limit on the total amount of spectrum which will disqualify an incumbent 2G/3G licensee from bidding the spectrum. An individual company or group of companies may not enter more than one bid. Existing licensees may form joint venture to bid for the licence and prior consent from the TA is not required for participation in the auction.

Proposal 7: The new licensee using spectrum in the relevant frequency block should not be subject to the Open Network Access requirement. Also, the Open Network Access requirement as applicable to the existing 2G and 3G licensees should be withdrawn altogether.

Proposal 8: The new licensee should be subject to the following special licence conditions:- Network and Service Coverage Obligation; Performance Bond; Denial of Service to Suspected Stolen Handsets; and the new licensee will NOT be subject to the Domestic Roaming Requirements.

TABLE A

FCC Auction #66 – October 2006
Winning Bids For Advanced Wireless Service (AWS) Licenses

MHz	Block	Market #	Name	Population (M)	Area (Sq.Mile)	Density (Pop/Sq.Mile)	Gross Price (\$M)	\$/Pop/MHz	Winning Bidder
20	A	CMA001	New York-Newark	16.13	3,915	4,121	396.2	1.22	T-Mobile
20	B	BEA010	NYC-Long Island	25.7	23,131	1,111	468.2	.92	Spectrum Co. LLC
10	C	BEA010	NYC-Long Island	25.7	23,131	1,111	364.0	1.41	Metro PCS
20	A	CMA002	Los Angeles-Anaheim	15.6	32,318	526	179.2	.57	Cingular
20	B	BEA160	LA-Riverside-Orange County	18.0	62,326	289	215.6	.60	Spectrum Co. LLC
10	C	BEA160	LA-Riverside-Orange County	18.0	62,326	289	114.8	.63	T-Mobile
20	A	CMA003	Chicago	8.1	3,756	2,238	254.8	1.57	T-Mobile
20	B	BEA064	Chicago-Gary-Kenosha	10.3	16,976	607	228.0	1.11	Spectrum Co. LLC
10	C	BEA064	Chicago-Gary Kenosha	10.3	16,976	607	162.1	1.57	Cingular
20	A	CMA004	Philadelphia	5.0	3,587	1,434	82.6	.83	Cricket
20	B	BEA012	Phil-Atlantic City	7.3	8,831	827	77.8	.53	Spectrum Co.
10	C	BEA012	Phil-Atlantic City	7.3	8,831	827	56.1	.77	T-Mobile
20	A	CMA006	Boston	4.3	3,261	1,678	36.8	.43	T-Mobile
20	B	BEA003	Boston-Worcester	8.0	17,274	463	76.8	.48	Spectrum LLC
10	C	BEA003	Boston-Worcester	8.0	17,274	463	30.5	.38	Cingular
20	A	CMA007	San Francisco-Oakland	4.1	2,557	1,292	27.0	.33	T-Mobile
20	B	BEA163	S.F.-Oakland-San Jose	9.1	33,126	275	80.8	.45	Spectrum Co. LLC
10	C	BEA163	S.F.-Oakland-San Jose	9.1	33,126	275	30.7	.34	Atlantic Wireless
20	A	CMA012	Miami-Ft. Lauderdale	3.9	3,205	1,294	35.6	.46	T-Mobile
20	B	BEA031	Miami-Ft. Lauderdale	5.6	10,454	536	61.0	.54	Spectrum Co. LLC
10	C	BEA031	Miami-Ft. Lauderdale	5.6	10,454	536	21.3	.38	Cingular
20	A	CMA017	Atlanta	3.8	4,383	964	30.0	.39	T-Mobile
20	B	BEA040	Atlanta	5.5	21,432	257	35.3	.32	Spectrum Co. LLC
10	C	BEA040	Atlanta	5.5	21,432	257	22.7	.41	Cingular

Note: Spectrum covered by licenses is as follows: Block A – 1710–1720/2110–2120 MHz; Block B – 1720–1730/2120–2130 MHz; Block C 1730–1735/2130–2135 MHz.

Sources: Federal Communications Commission (FCC) and U.S. Census Bureau
DC 635432v.1

TABLE B**Population and Area For Selected U.S. Mobile Market Licenses (2006)**

<i>Basic Economic Area (BEA)</i>	<i>Population (M)</i>	<i>Area (Square Miles)</i>	<i>Pop. Per Sq. Mile</i>
010 (NYC-Long Island)	25.7	23,131	1,111
160 (LA-Riverside-Orange County)	18.0	62,326	289
064 (Chicago-Gary-Kenosha)	10.3	16,976	607
012 (Philadelphia-Atlantic City)	7.3	8,831	827
039 (Boston-Worcester)	8.0	17,274	463
163 (S.F.-Oakland-San Jose)	9.1	33,126	275
031 (Miami- Ft. Lauderdale)	5.6	10,454	536
040 (Atlanta)	5.5	21,432	257
<i>Cellular Market Area (CMA)</i>	<i>Population (M)</i>	<i>Area (Square Miles)</i>	<i>Pop. Per Sq. Mile</i>
001 (New York-Newark)	16.1	3,915	4,121
002 (LA-Anaheim)	17.0	32,318	526
003 (Chicago)	8.4	3,756	2,238
004 (Philadelphia)	5.1	3,587	1,434
006 (Boston)	4.3	3,261	1,678
007 (San Francisco-Oakland)	4.1	2,557	1,292
012 (Miami-Ft. Lauderdale)	4.1	3,205	1,294
017 (Atlanta)	4.2	4,383	964

Sources: Federal Communications Commission (FCC) and U.S. Census Bureau

TABLE C**FCC Auction #66: Advanced Wireless Service (AWS) Licenses on Offer
(September 2006)**

<u>Block</u>	<u>Frequency Bands (MHz)</u>	<u>Total Bandwidth</u>	<u>Geographic Area Type</u>	<u>No. of Licenses</u>
A	1710-1720 / 2110-2120	20 MHz	CMA	734
B	1720-1730 / 2120-2130	20 MHz	BEA	176
C	1730-1735 / 2130-2135	10 MHz	BEA	176
D	1735-1740 / 2135-2140	10 MHz	BEA	12
E	1740-1745 / 2140-2145	10 MHz	REAG	12
F	1745-1755 / 2145-2155	20 MHz	REAG	12

CMA = Cellular Market Area (typically a city or town)

BEA = Basic Economic Area (metro area)

REAG = Regional Economic Area Group (one of twelve multi-state groups)