



# Hong Kong, China: The Case for LTE 2.6 / 1.8 GHz and DC-HSPA+

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## ***Agenda***

***CSL Overview and Current Situation***  
***The Need for LTE at 2.6 and 1.8 GHz***  
***The Need for DC-HSPA+***  
***Roaming Considerations***  
***Conclusions***

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## CSL is Hong Kong's Leading Mobile Operator



- Established in 1983, CSL was Hong Kong's first mobile operator
- Subsidiary of Telstra, Australia's leading operator
- Awarded a 4G FD-LTE 2.6 GHz license in January 2009
- First to launch All IP 21 Mbps network in March 2009
- Started a wide-area LTE Trial in November 2009
- Launched World's First Dual Band 2.6G/1.8G LTE/DC-HSPA+ network in November 2010

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## *The Need for LTE at 2.6GHz and 1.8GHz*

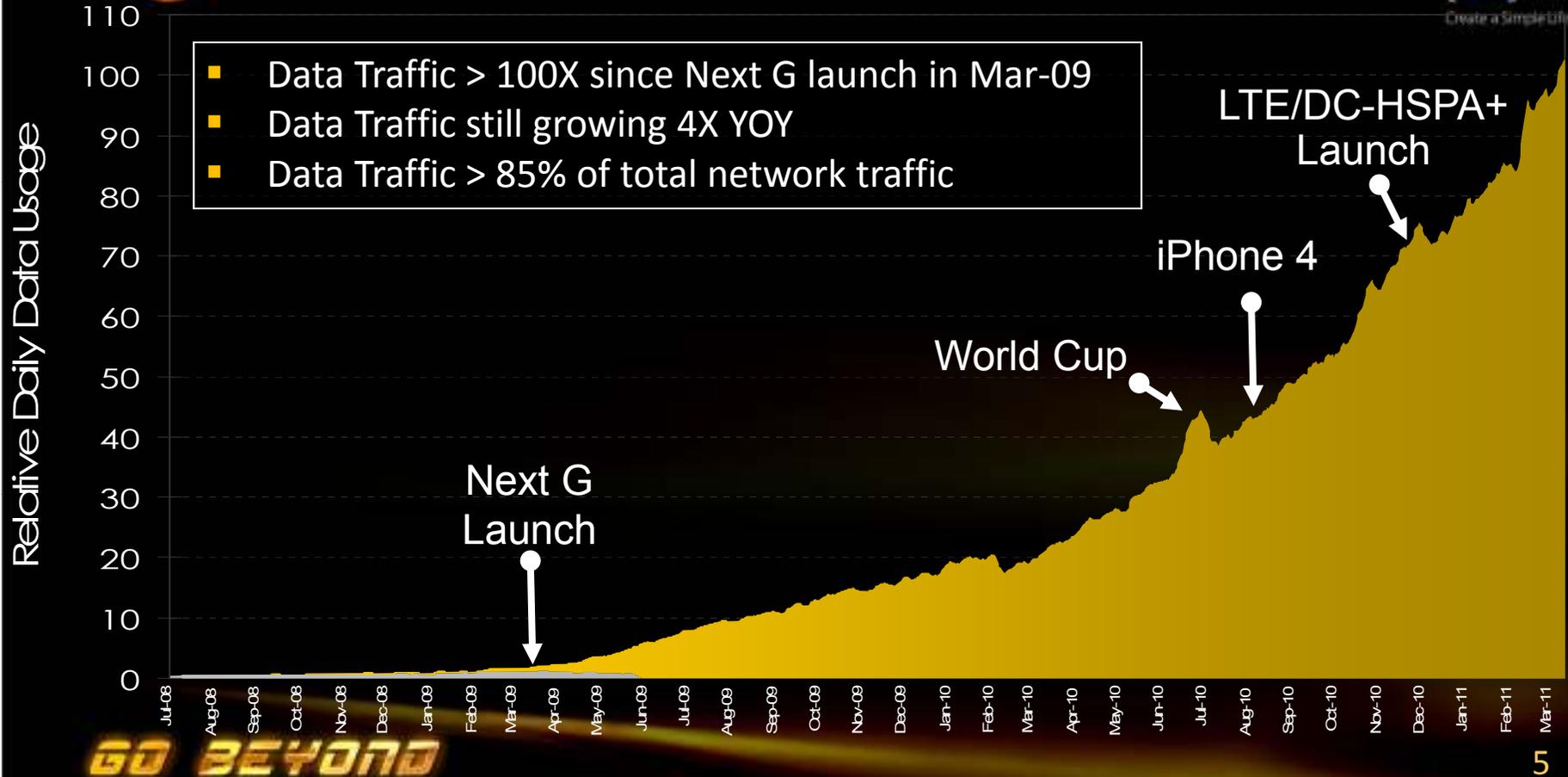
*(1) Capacity*

*(2) Coverage*

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# The Mobile Data Explosion Continues





## CSL – Current Spectrum Holdings

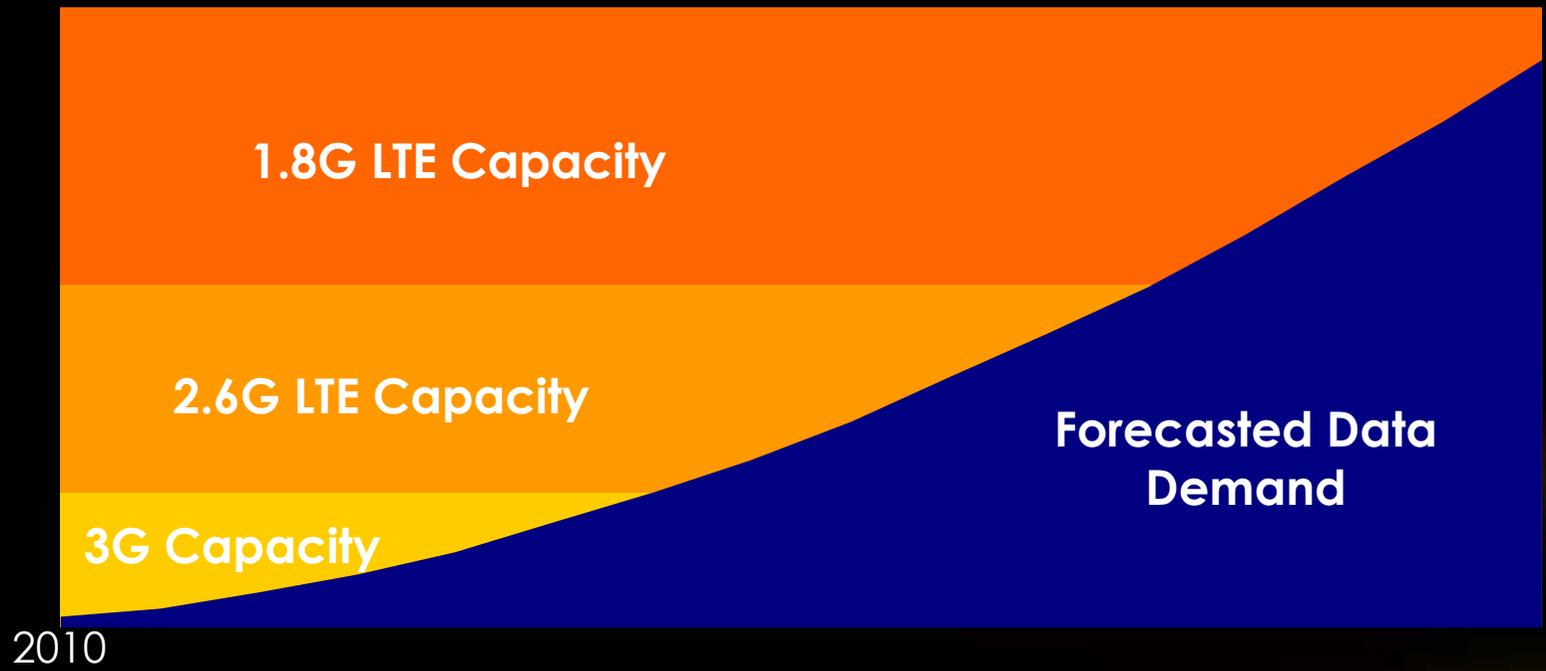


	Allocation	Use
900 MHz	8.3 MHz X 2	2G + 3G
1800 MHz	23 MHz X 2	2G + <b>LTE</b>
2100 MHz	14.8 MHz X 2 5 MHz X 1	3G (DC-HSPA+)
2600 MHz	15 MHz X2	<b>LTE</b>
Total	127.6 MHz	

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# The Data Explosion – the Need for LTE



**LTE at 1800MHz and 2600MHz is Needed to Meet Traffic Demand**

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## Coverage – Leveraging Existing DAS



Times Square, Causeway Bay

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Admiralty MTR Station



Cross-Harbour Tunnel

- HK is a very mature mobile network with nearly 50% of sites located indoors
- Use LTE 1800MHz to provide coverage and leverage existing DAS investments



## *The Need for DC-HSPA+*

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## *LTE Being Built in Busy Areas First*



LTE 1800/2600 MHz  
Performance/Capacity  
Layer

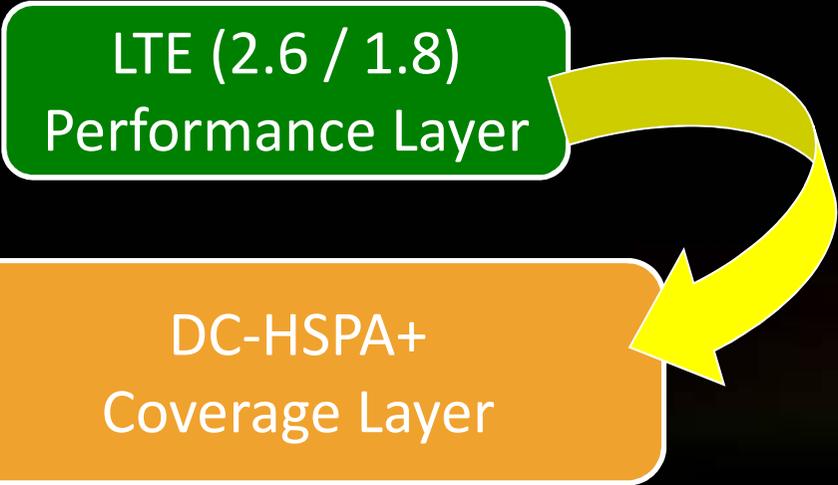
UMTS 900/2100 MHz  
DC-HSDPA  
Coverage Layer

**LTE 1800+2600 is Required For Deployment and Capacity Reasons;  
DC-HSPA+ is Required as the Coverage Layer for LTE**

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# DC-HSPA+ as LTE Coverage Layer



	Performance
LTE (15MHz)	DL: ~4X UL: ~5X
DC-HSPA+	DL: ~2X UL: ~1X
HSPA+ Baseline	DL: 1X UL: 1X

**DC-HSPA+ Required to Maintain User Experience**



# *Roaming Considerations*

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## LTE/DC-HSPA+ Global Roaming



A global device should have the following minimum frequency support:

- DC-HSPA+ 850MHz
- DC-HSPA+ 900MHz
- DC-HSPA+ 2100MHz
- LTE 1800MHz
- LTE 2600MHz

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## *In Closing*



- CSL is deploying LTE @ 1800MHz for capacity and coverage reasons
- Device support for LTE 1800MHz + DC-HSPA + Roaming bands is critical

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Thank You!

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## Introducing the First LTE/DC-HSPA+ UE



- Collaboration with ZTE and Qualcomm since November 2009
- Bring a device optimized to bring best customer experience leveraging 3G and LTE networks



### Frequency and Technology Support

- LTE-FDD 1800 / 2600 MHz
- DC-HSPA+ 850 / 900 / 2100 MHz
- EDGE/GSM 900 / 1800 MHz

### Peak Data Rates:

- LTE: DL 100Mbps / UL 50Mbps
- DC-HSPA+: DL 42Mbps / UL 5.76Mbps

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