

FIELD PERFORMANCE EVALUATION OF VOIP IN 4G TRIALS

Hongguang Zhang, Mohammed
Boutabia, Hang Nguyen, Lingnan Xia

outline

- Introduction
- Experiment Environment
- Performance Analysis
- Conclusion

Introduction

- Analysis performance of VoIP on WiMAX
- Use Perceptual Evaluation of Speech Quality (PESQ) to evaluate the voice quality, the packet loss, jitter and delay for network tests.

Experiment Environment(1)

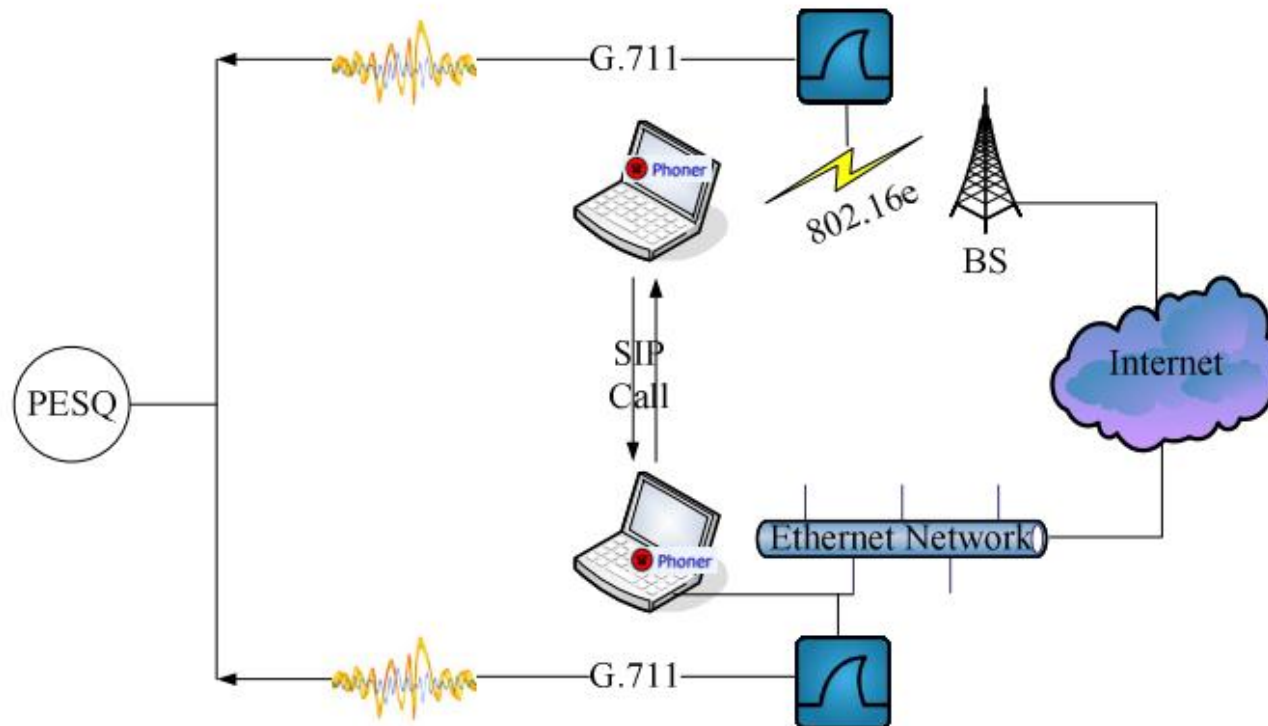
- Network Environment
 - Use Alcatel-Lucent 9715 L-WBS a lightweight WiMAX based station
 - The reference networks are the Asymmetrical Digital Subscriber Loop (ADSL) network operated by France Telecom.

Experiment Environment(2)

Central Frequency	2.57 GHz and 2.59 GHz
Channel Bandwidth	10 MHz
Fast Fourier Transform (FFT) Size	1024
Modulation	QPSK, 16-QAM, 64-QAM
Coding Scheme	Convolutional Turbo Code (CTC)
Multiple Access Method	Scalable OFDMA
Duplexing	Time Division Duplex (TDD)
Frame Duration	5 ms, UL/DL = 1/2
Handover	Hard Handover (HHO)

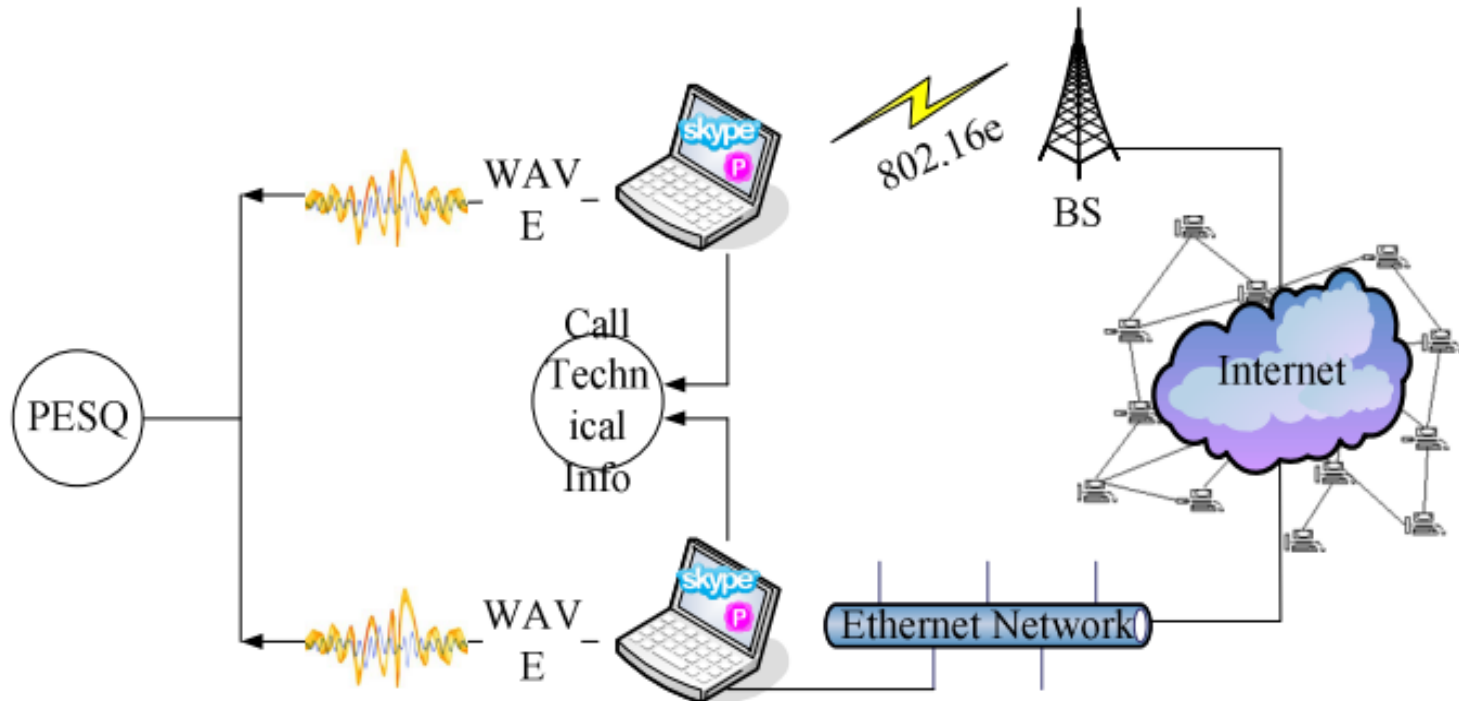
Experiment Environment(2)

- Application Environment
 - softphone Phoner



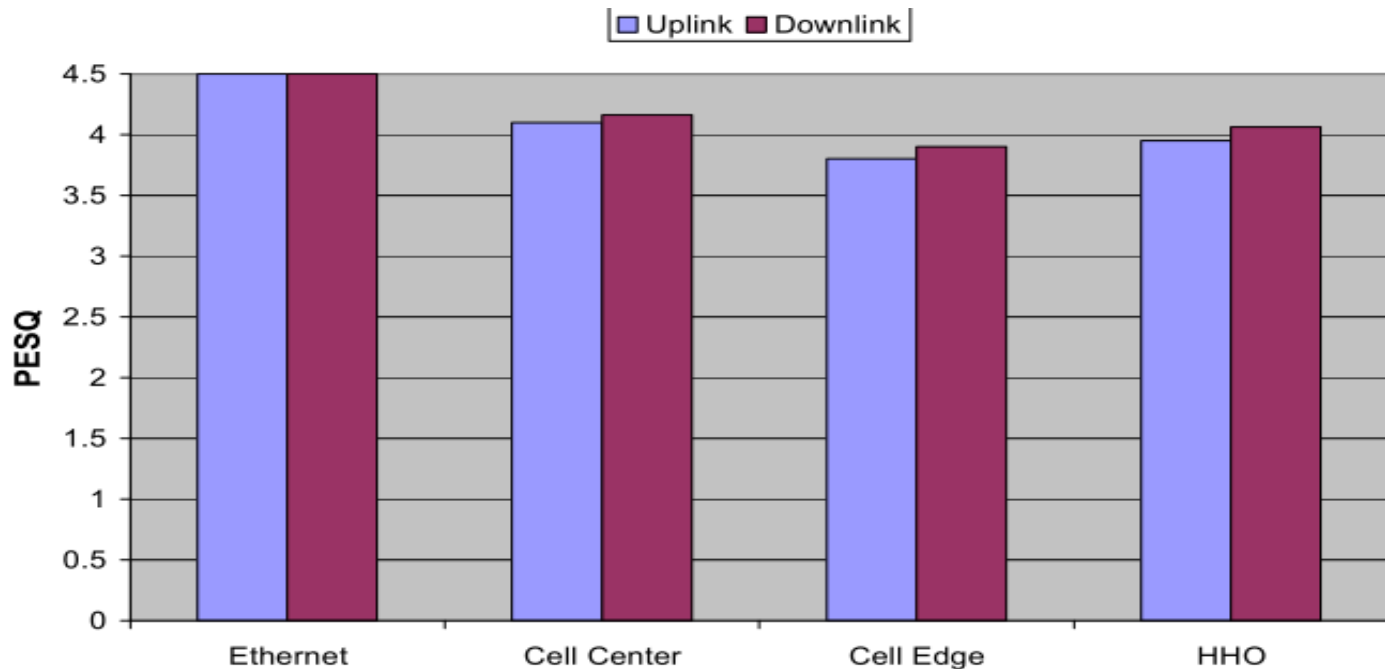
Experiment Environment(2)

- Application Environment
 - Skype



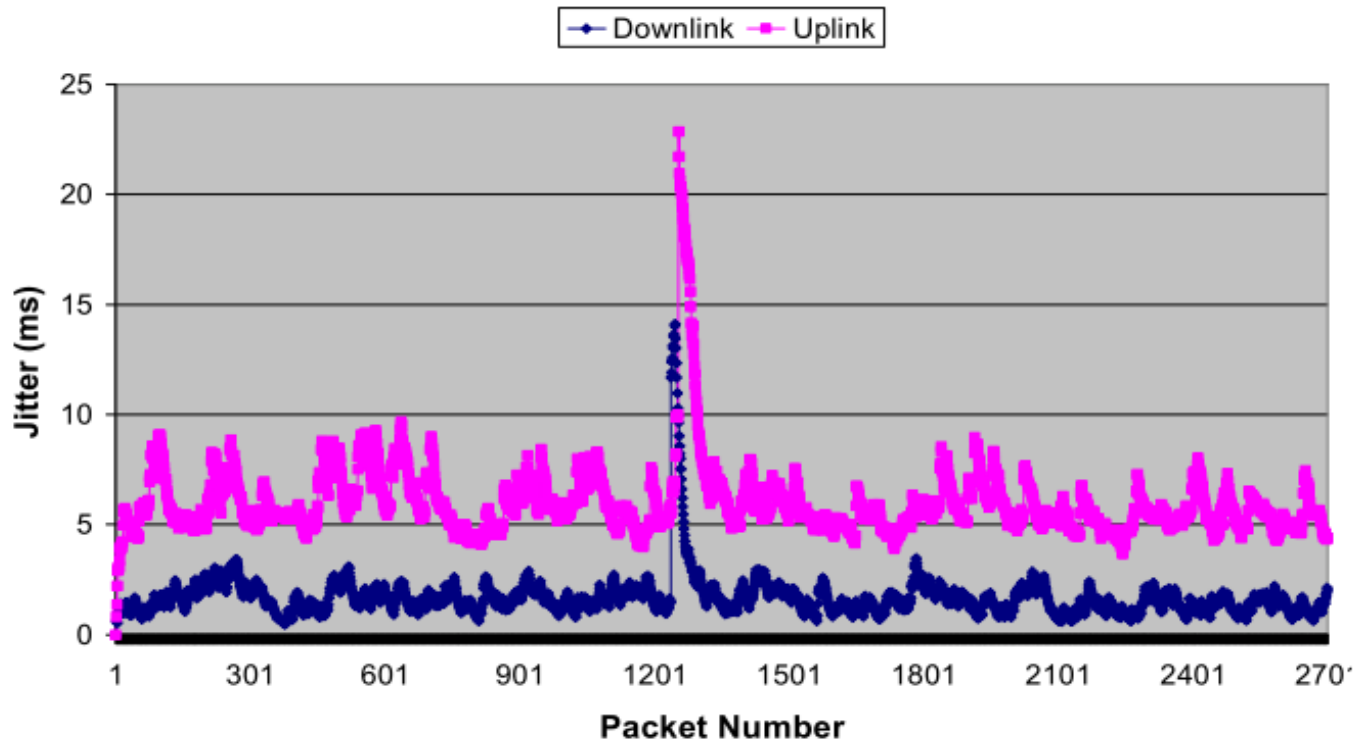
Performance Analysis(1)

- loss incurred by HHO is only one packet
- the duration of HHO is less than 40 ms

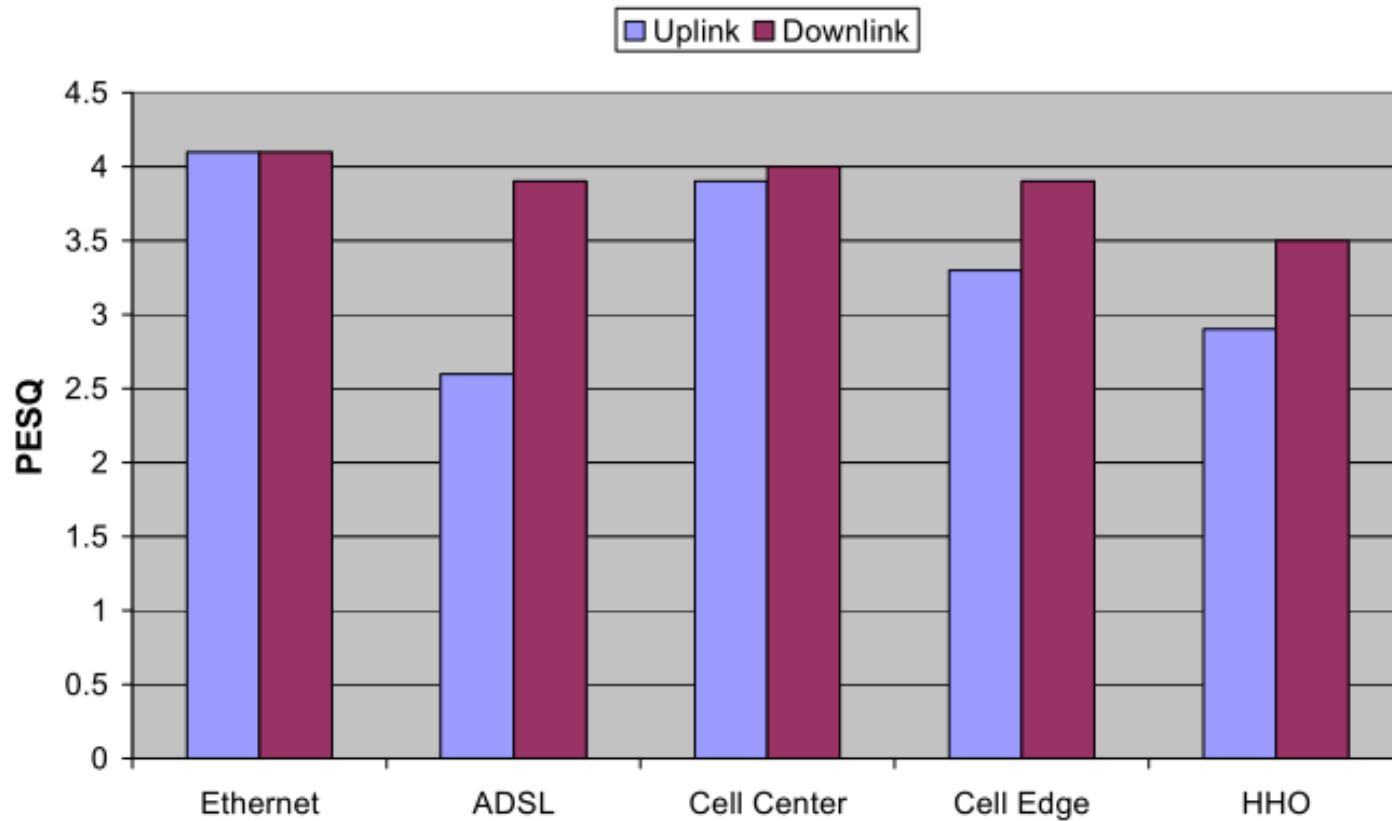


Performance Analysis(2)

- Phoner(2)
 - the packet loss can even reach 35% and the mean jitter 20 ms on HHO

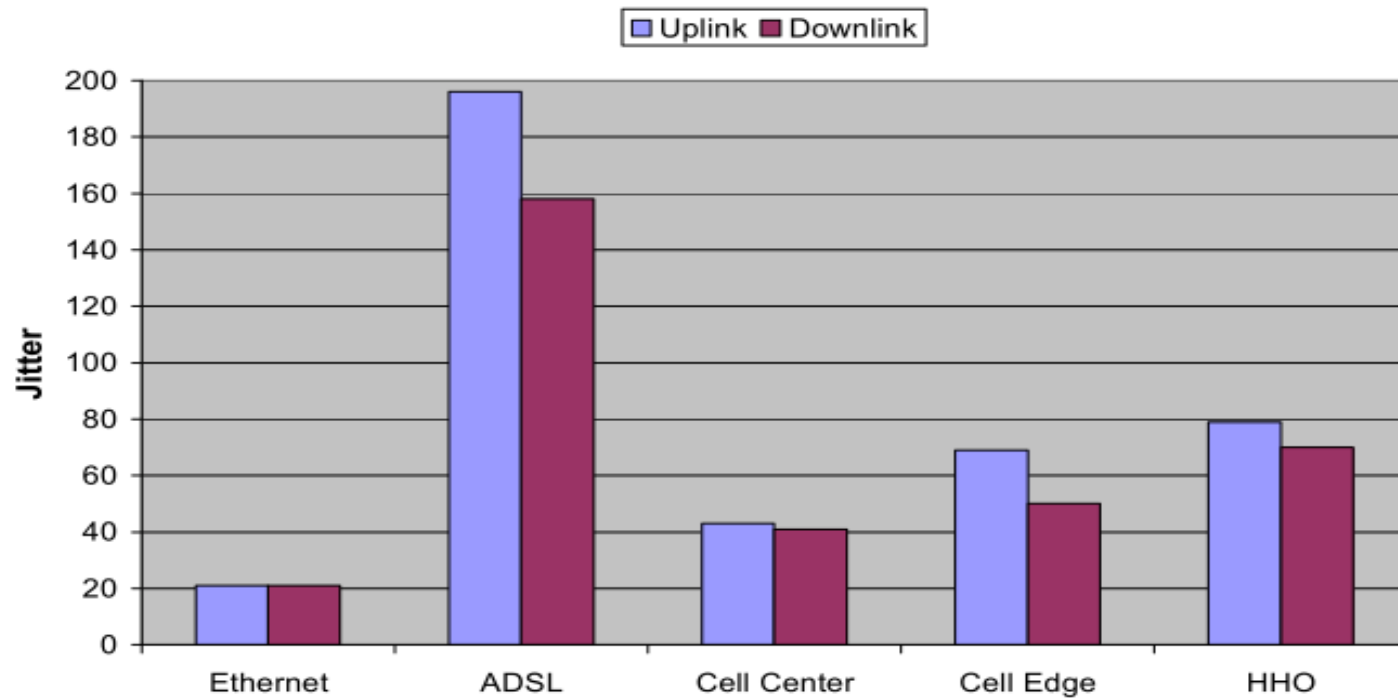


Performance Analysis(3)



Performance Analysis(4)

- Compared with Phoner, Skype is more affected by HHO



Conclusion

- Experiments of VoIP evaluation from a real mobile WiMAX testbed
- The performance of VoIP over WiMAX is good, despite the degraded quality via uplink at the cell edge