



**Confidential**

**Document Type**

- |   |  |
|---|--|
| <input type="checkbox"/> Requirement (RQ)   | <input type="checkbox"/> External Specification (ES) |
| <input type="checkbox"/> Internal Specification (IS)  | <input type="checkbox"/> Design Specification (DS)   |
| <input type="checkbox"/> Test Plan (TP)   | <input type="checkbox"/> Release Note (RN)           |
| <input type="checkbox"/> Bug Report (BR)  | <input type="checkbox"/> Training Material (TM)      |
| <input checked="" type="checkbox"/> Other <u>Indoor Test Report MESH PtP(Point to Point) (OT)</u> |  |

**Document ID.**

OT-2012-11-2001

**Subject**

Indoor Test Report  
of  
APM-10xR

**Revision History**

Rev.	Date	Author	Reason for Changes
1.0	Nov. 20, 2012	Jacky Cheng	• Initial draft
			•
			•



## Contents

1.0 SCOPE.....	1
1.1 INTRODUCTION.....	1
1.2 DATE/TIME.....	1
1.3 LOCATION .....	1
1.4 EQUIPMENT .....	1
1.5 TOPOLOGY .....	1
2.0 ENVIRONMENT .....	2
3.0 TEST RESULTS.....	2
3.1 單路無線, TCP, HT20, PC1 → PC2 100Tx.....	4
3.2 單路無線, TCP, HT40, PC1 → PC2 100Tx.....	4
3.3 單路無線, TCP, HT20, PC1 ← PC2 100Rx.....	5
3.4 單路無線, TCP, HT40, PC1 ← PC2 100Rx.....	5
3.5 單路無線, TCP, HT20, PC1 ↔ PC2 60Tx60Rx.....	6
3.6 單路無線, TCP, HT40, PC1 ↔ PC2 60Tx60Rx.....	6
3.7 雙路無線, TCP, HT20, PC1 → PC2 100Tx.....	7
3.8 雙路無線, TCP, HT40, PC1 → PC2 100Tx.....	7
3.9 雙路無線, TCP, HT20, PC1 ← PC2 100Rx.....	8
3.10 雙路無線, TCP, HT40, PC1 ← PC2 100Rx.....	8
3.11 雙路無線, TCP, HT20, PC1 ↔ PC2 60Tx60Rx.....	9
3.12 雙路無線, TCP, HT40, PC1 ↔ PC2 60Tx60Rx.....	9
3.13 雙路無線, VIDEO STREAMING, RTP/UDP, HT20, PC1 → PC2 100Tx.....	10
3.14 雙路無線, VIDEO STREAMING, RTP/UDP, HT40, PC1 → PC2 170Tx.....	10
3.15 雙路無線, VIDEO STREAMING, RTP/UDP, HT20, PC1 ← PC2 100Rx.....	11
3.16 雙路無線, VIDEO STREAMING, RTP/UDP, HT40, PC1 ← PC2 170Rx.....	11
3.17 雙路無線, VIDEO STREAMING, RTP/UDP, HT20, PC1 ↔ PC2 80Tx80Rx.....	12
3.18 雙路無線, VIDEO STREAMING, RTP/UDP, HT40, PC1 ↔ PC2 100Tx100Rx.....	12
APPENDIX I .....	13

## 1.0 Scope

### 1.1 Introduction

本文件主要說明 IO-Power APM-10xR Access Point 室內 MESH 點對點(Point to Point)效能測試報告。

### 1.2 Date/Time

- 測試日期：2012/11/20
- 測試時間：AM 10:00 ~ PM 18:00

### 1.3 Location

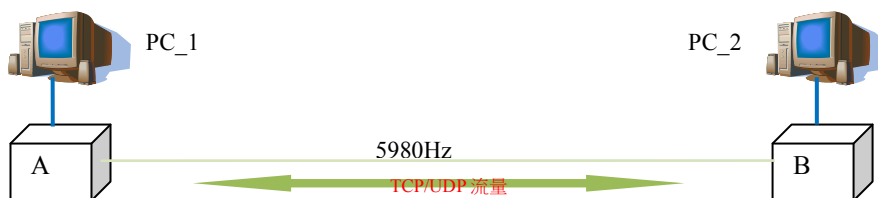
- IO-Power Office

### 1.4 Equipment

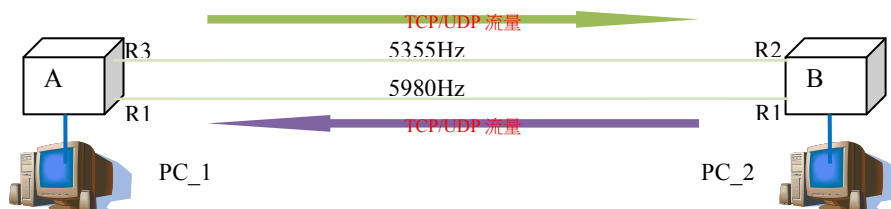
- 無線設備：APM-103R x 2
- 天線設備：無，Indoor RF cable 並以每一個 Antenna port 加上 60dB 衰減器(30dB x 2)相連接
- 電腦設備：ASUS 電腦 x 2
- 軟體設備：Windows XP SP3、IxChariot 5.40
- APM-103R Firmware Version：2.04

### 1.5 Topology

- AP-A ~ AP-B, MESH version, PC\_1 ~ PC\_2
- 二種不同測試架構
  - (a) MESH 以單路無線連接



- (b) MESH 以兩路無線連接



## 2.0 Environment

上頁圖示中，AP 之間皆以 2 條 RF cable 連接(2x2 MIMO)，且加以 60dB 衰減器(30dB x 2)，AP 設定為 HT40 與 HT20 模式分別測試。

A 為 MG(MESH Gateway)，B 為 MAP(MESH Access Point)。

PC 之間以 IxChariot 測試，以 High Performance Script 進行 TCP 流量測試，同時間共有 100 ~ 120 pairs 啟動測試，測試項目如下：

- (1) PC\_1 → PC\_2，單向流量，
  - (2) PC\_1 ← PC\_2，單向流量，
  - (3) PC\_1 ↔ PC\_2，雙向流量，
- 每回測試時間為 10 分鐘。

## 3.0 Test Results

單路無線 TCP	HT20	PC1→PC2 100Tx	Total Throughput(Mbps)	Response Time	Transaction Rate
			77.023	96.354	1.044
	HT40	PC1→PC2 100Tx	Total Throughput(Mbps)	Response Time	Transaction Rate
			148.481	51.582	1.946
	HT20	PC1←PC2 100Rx	Total Throughput(Mbps)	Response Time	Transaction Rate
			76.862	96.339	1.042
	HT40	PC1←PC2 100Rx	Total Throughput(Mbps)	Response Time	Transaction Rate
			147.948	51.670	1.942
	HT20	PC1↔PC2 60Tx60Rx	Total Throughput(Mbps)	Response Time	Transaction Rate
			72.414	121.579	0.994
	HT40	PC1↔PC2 60Tx60Rx	Total Throughput(Mbps)	Response Time	Transaction Rate
			150.416	60.342	1.995

雙路無線 TCP (%為雙路/單路)	HT20	PC1→PC2 100Tx	Total Throughput(Mbps)	Response Time	Transaction Rate
			93.735 (122%)	79.267	1.265
	HT40	PC1→PC2 100Tx	Total Throughput(Mbps)	Response Time	Transaction Rate
			186.178 (125%)	41.571	2.411
	HT20	PC1←PC2 100Rx	Total Throughput(Mbps)	Response Time	Transaction Rate
			100.175 (130%)	75.691	1.339
	HT40	PC1←PC2 100Rx	Total Throughput(Mbps)	Response Time	Transaction Rate
			187.625 (127%)	41.245	2.430
	HT20	PC1↔PC2 60Tx60Rx	Total Throughput(Mbps)	Response Time	Transaction Rate
			171.602 (237%)	54.059	2.242
	HT40	PC1↔PC2 60Tx60Rx	Total Throughput(Mbps)	Response Time	Transaction Rate
			210.383 (140%)	44.209	2.729



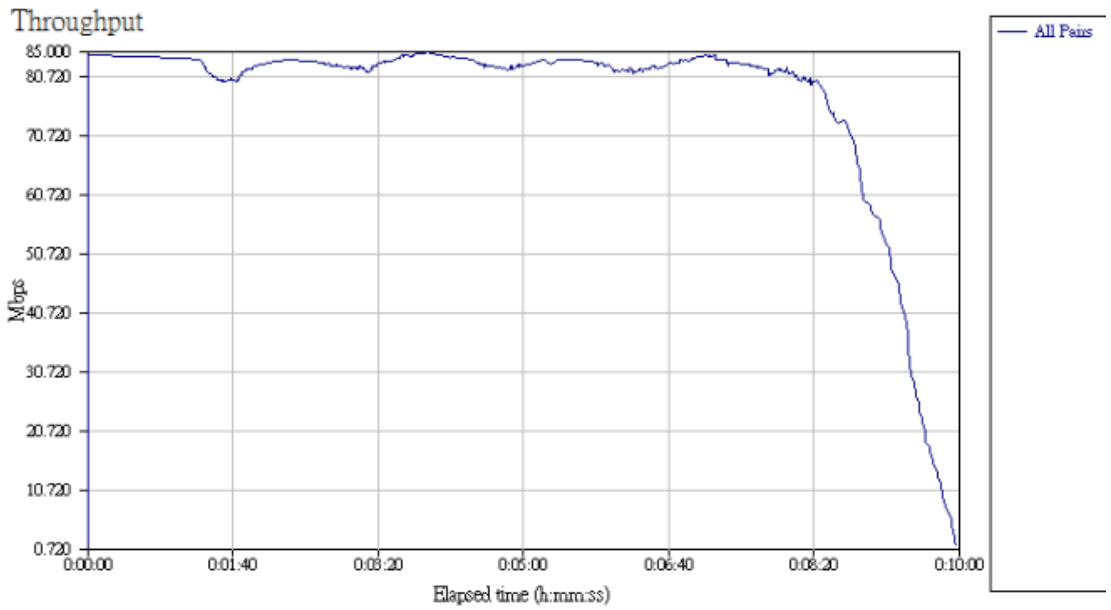
雙路無線 Video Streaming RTP/UDP	HT20	PC1→PC2 100Tx	Total Throughput(Mbps)	One-Way Delay (ms)	Jitter(ms)
			103.068	32	0.499
	HT40	PC1→PC2 170Tx	Total Throughput(Mbps)	One-Way Delay (ms)	Jitter(ms)
			206.264	22	0.777
	HT20	PC1←PC2 100Rx	Total Throughput(Mbps)	One-Way Delay (ms)	Jitter(ms)
			106.711	34	1.574
	HT40	PC1←PC2 170Rx	Total Throughput(Mbps)	One-Way Delay (ms)	Jitter(ms)
			201.299	29	1.065
	HT20	PC1↔PC2 80Tx80Rx	Total Throughput(Mbps)	One-Way Delay (ms)	Jitter(ms)
			206.895	55	0.617
	HT40	PC1↔PC2 100Tx100Rx	Total Throughput(Mbps)	One-Way Delay (ms)	Jitter(ms)
			288.652	21	1.811



### 3.1 單路無線, TCP, HT20, PC1→PC2 100Tx

#### Throughput

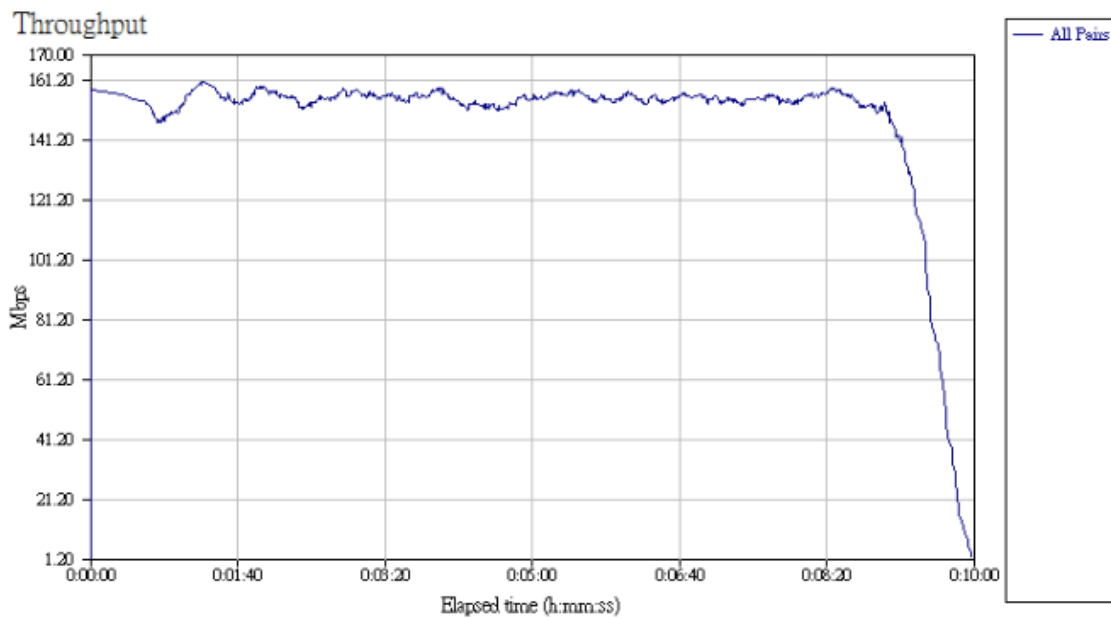
Pair 100	0.842	0.772	0.928	0.
Totals:	77.023	0.315	1.342	



### 3.2 單路無線, TCP, HT40, PC1→PC2 100Tx

#### Throughput

Pair 100	1.656	1.249	2.025	0.
Totals:	148.481	0.544	3.618	

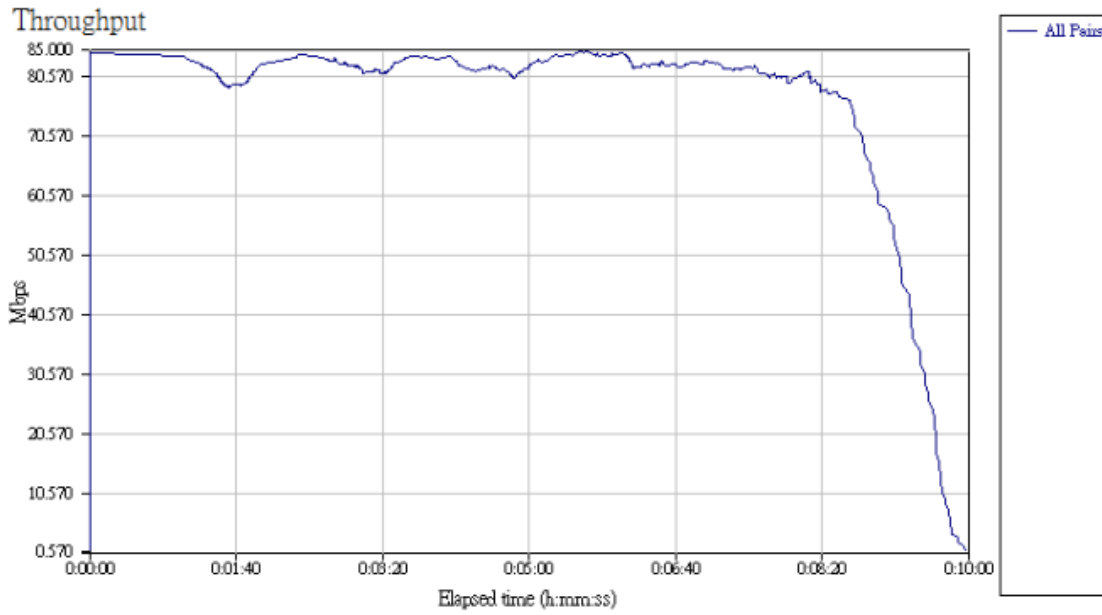




### 3.3 單路無線, TCP, HT20, PC1←PC2 100Rx

#### Throughput

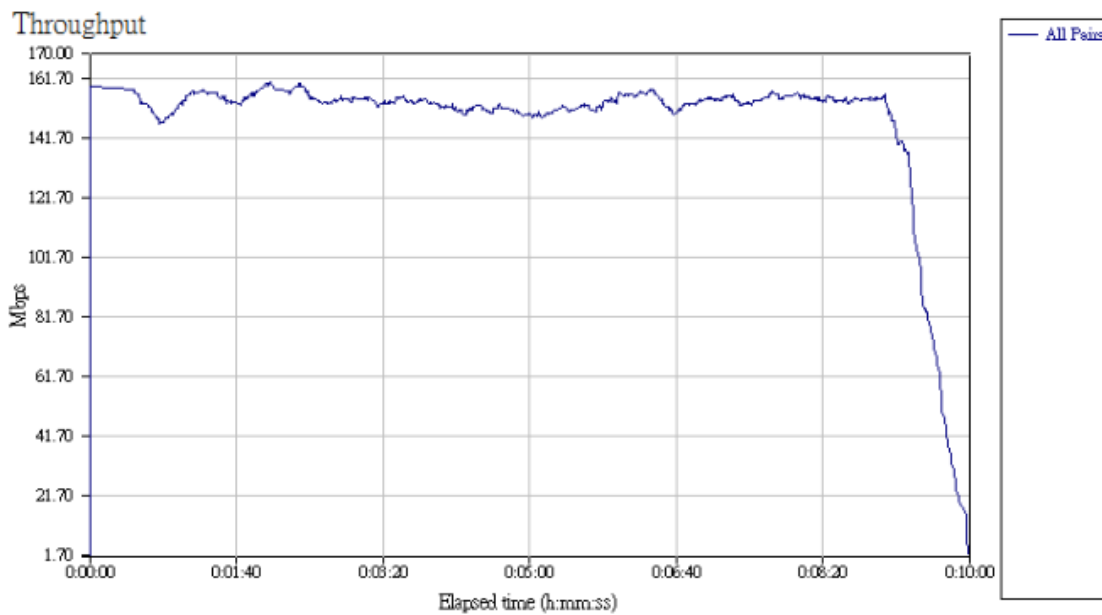
Pair 100	0.857	0.813	0.950	C
Totals:	76.862	0.416	1.252	



### 3.4 單路無線, TCP, HT40, PC1←PC2 100Rx

#### Throughput

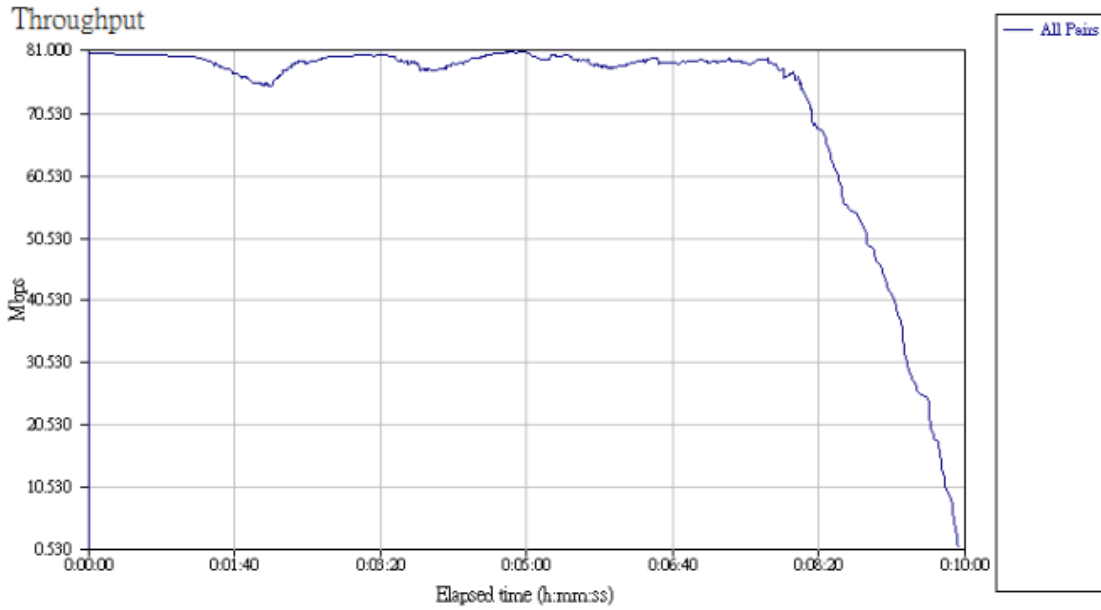
Pair 100	1.414	1.070	1.724	C
Totals:	147.948	0.813	3.069	



### 3.5 單路無線, TCP, HT20, PC1 ↔ PC2 60Tx60Rx

#### Throughput

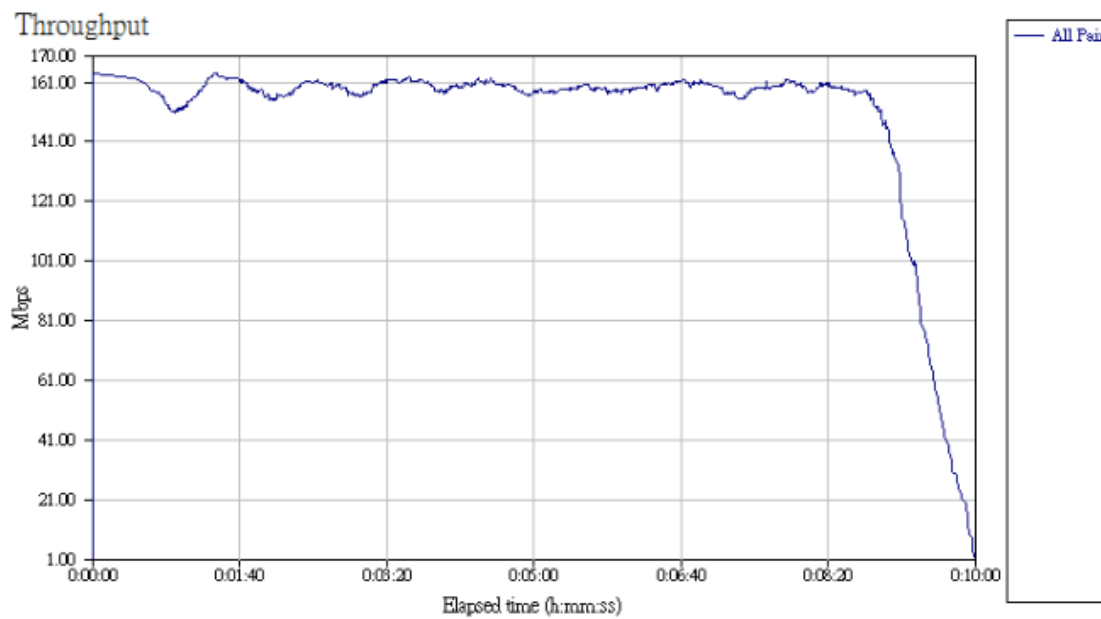
Pair 120	0.600	0.529	0.668	0
Totals:	72.414	0.368	1.373	



### 3.6 單路無線, TCP, HT40, PC1 ↔ PC2 60Tx60Rx

#### Throughput

Pair 120	1.279	1.131	1.520	0
Totals:	150.416	0.786	2.812	



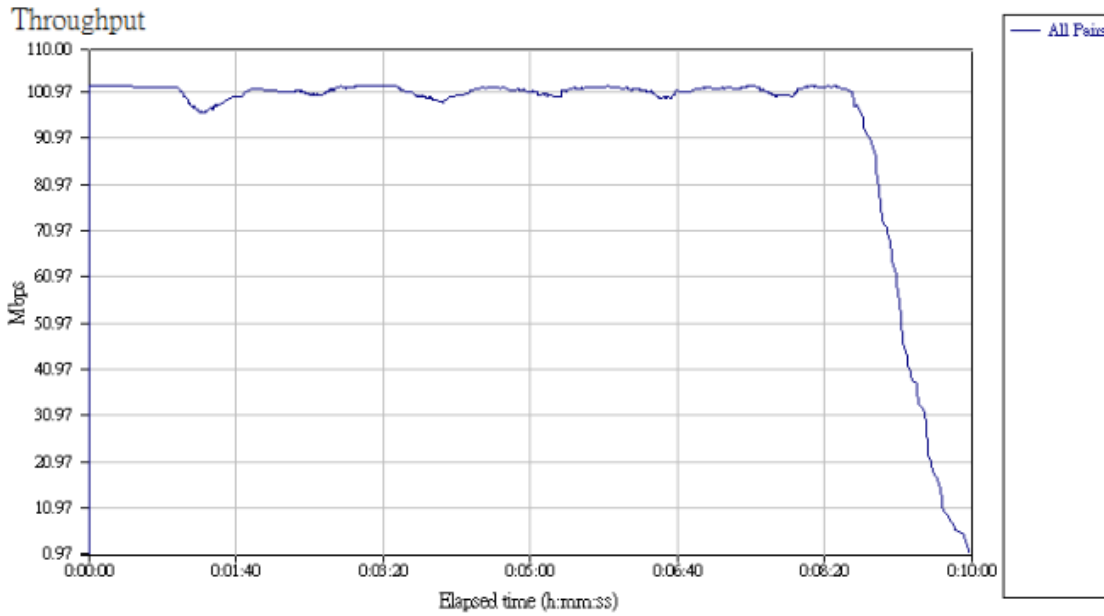




### 3.7 雙路無線, TCP, HT20, PC1→PC2 100Tx

#### Throughput

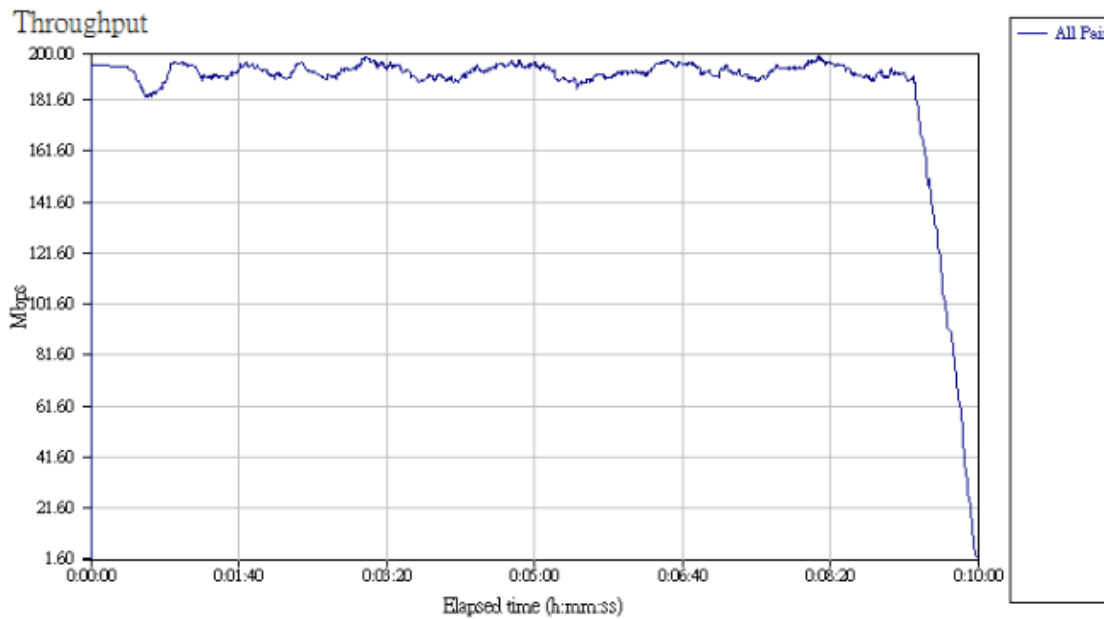
Pair 100	1.039	0.819	1.191	
Totals:	93.735	0.337	1.393	



### 3.8 雙路無線, TCP, HT40, PC1→PC2 100Tx

#### Throughput

Pair 100	1.853	1.348	2.339	
Totals:	186.178	0.607	3.411	

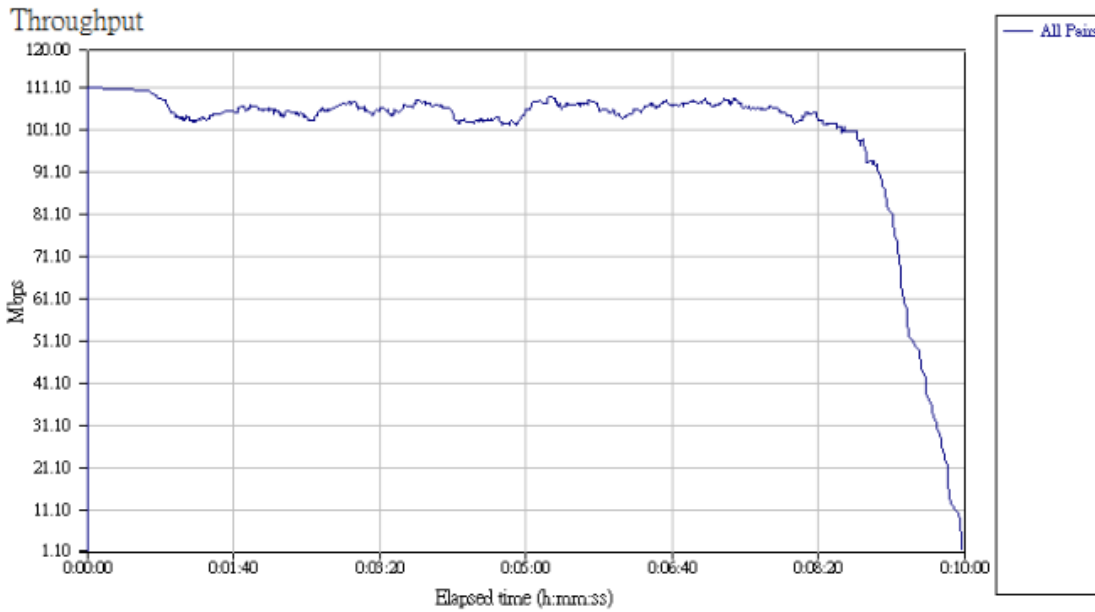




### 3.9 雙路無線, TCP, HT20, PC1←PC2 100Rx

#### Throughput

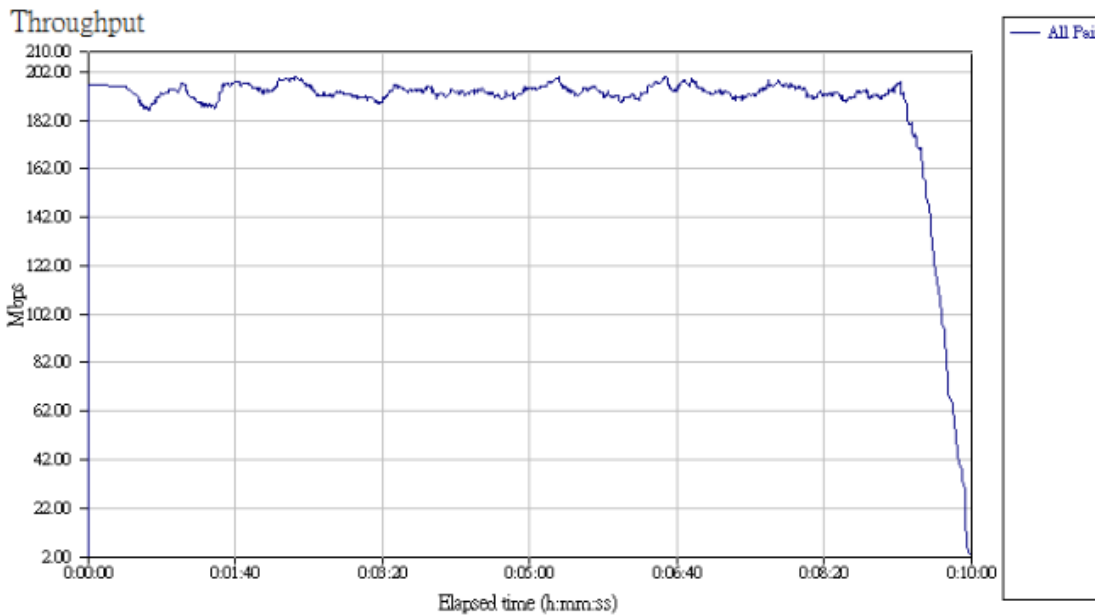
Pair 100	0.869	0.714	1.188	
Totals:	100.175	0.272	1.901	



### 3.10 雙路無線, TCP, HT40, PC1←PC2 100Rx

#### Throughput

Pair 100	2.089	1.715	2.805	
Totals:	187.625	0.598	3.257	

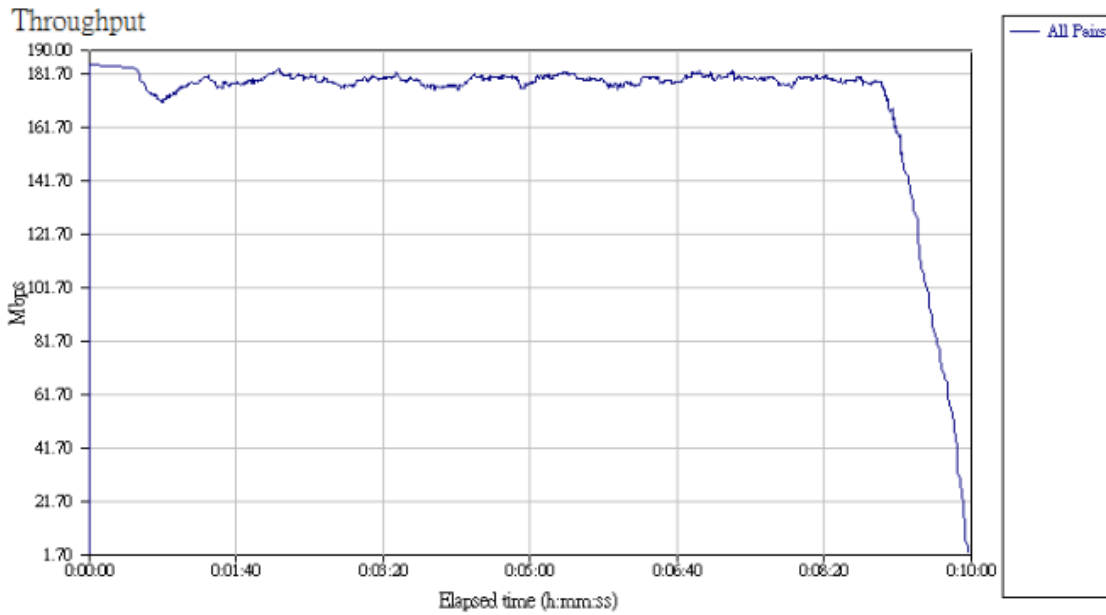




### 3.11 雙路無線, TCP, HT20, PC1↔PC2 60Tx60Rx

#### Throughput

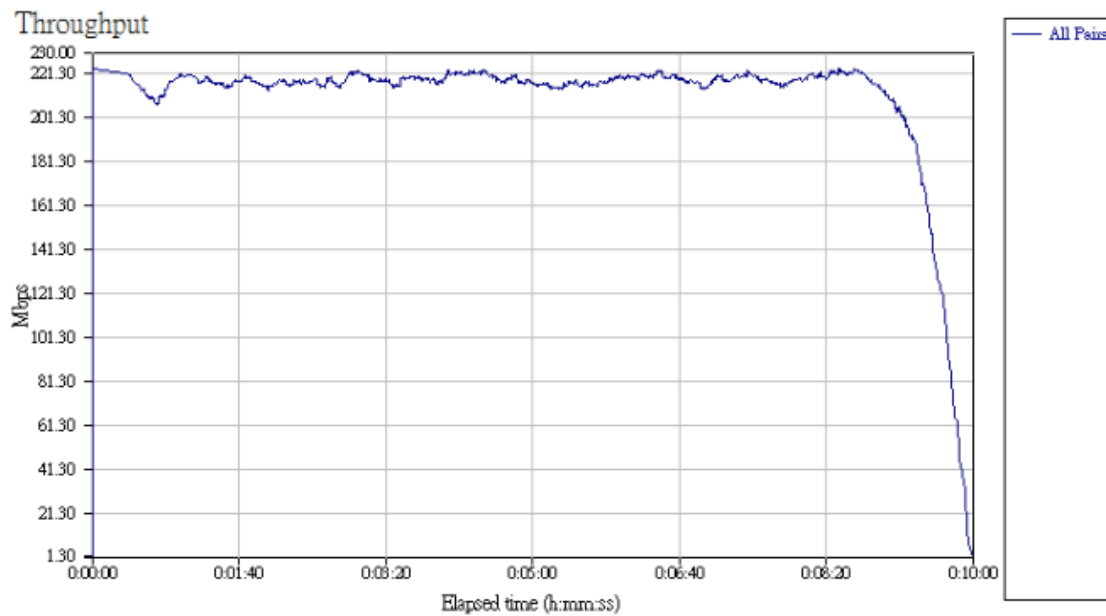
Pair 120	1.556	1.289	2.124	0
Totals:	171.602	0.819	3.873	



### 3.12 雙路無線, TCP, HT40, PC1↔PC2 60Tx60Rx

#### Throughput

Pair 120	1.776	1.484	2.096	0
Totals:	210.383	1.062	3.906	

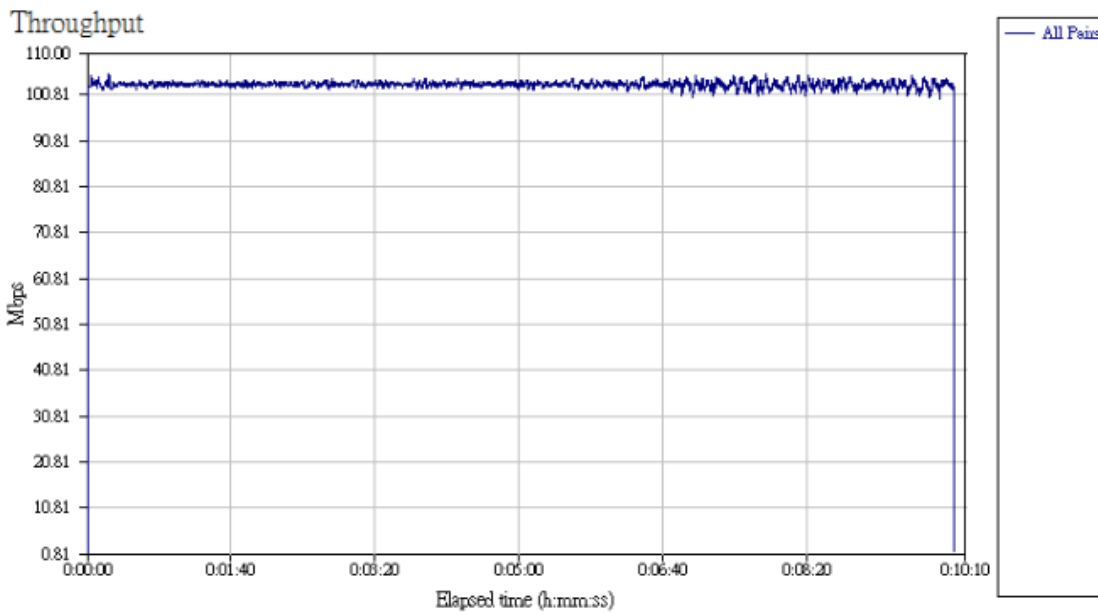




### 3.13 雙路無線, Video Streaming, RTP/UDP, HT20, PC1→PC2 100Tx

#### Throughput

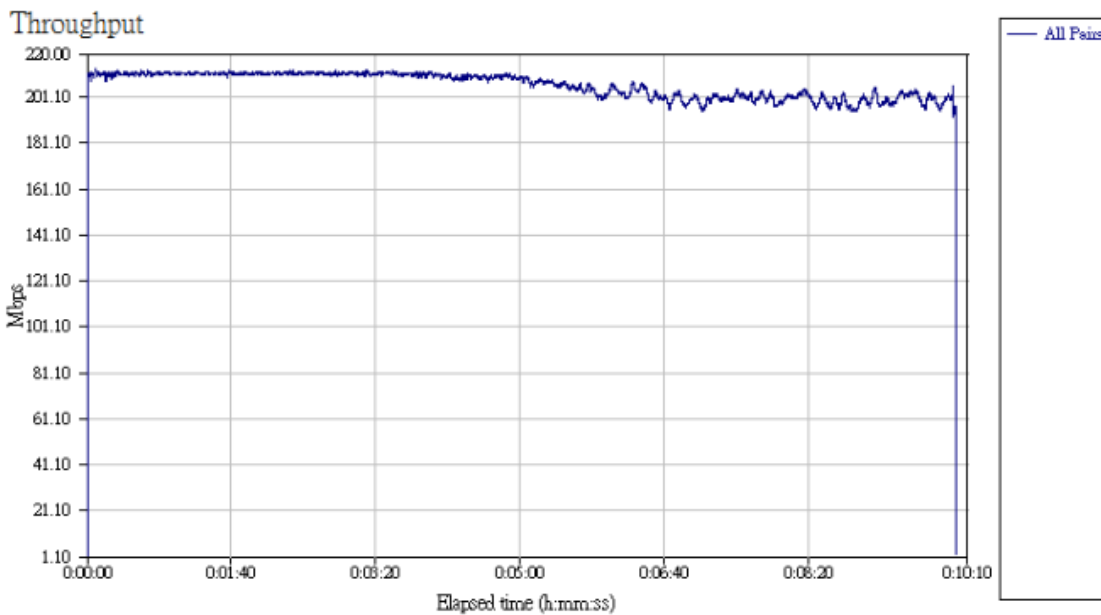
Pair 100	1.023	0.593	1.451	0
Totals:	103.068	0.450	1.455	



### 3.14 雙路無線, Video Streaming, RTP/UDP, HT40, PC1→PC2 170Tx

#### Throughput

Pair 170	1.074	0.673	1.446	0
Totals:	206.264	0.599	1.455	

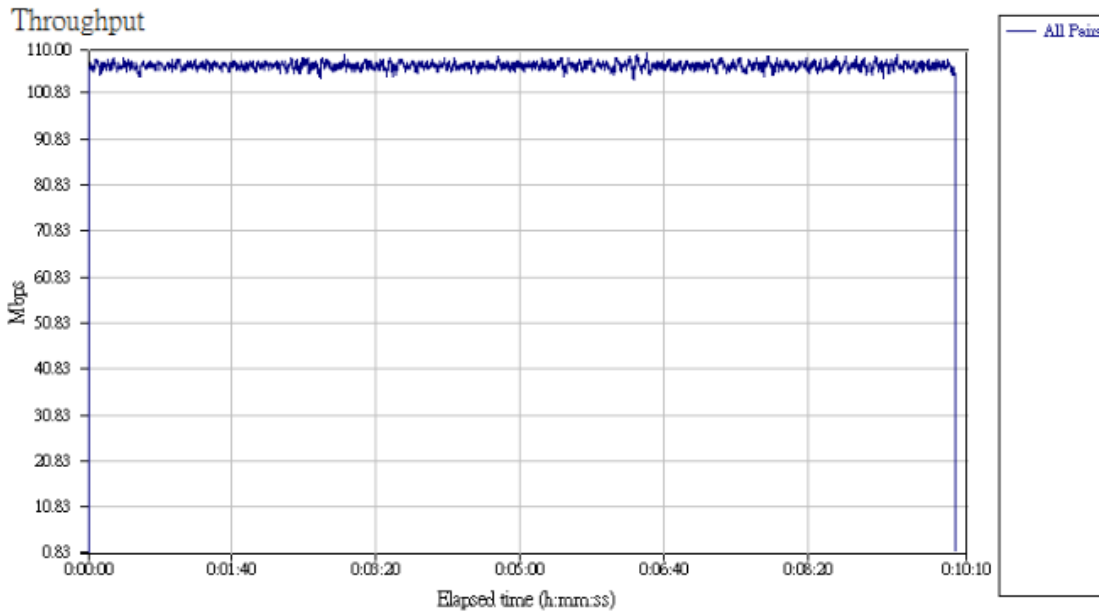




### 3.15 雙路無線, Video Streaming, RTP/UDP, HT20, PC1 ← PC2 100Rx

#### Throughput

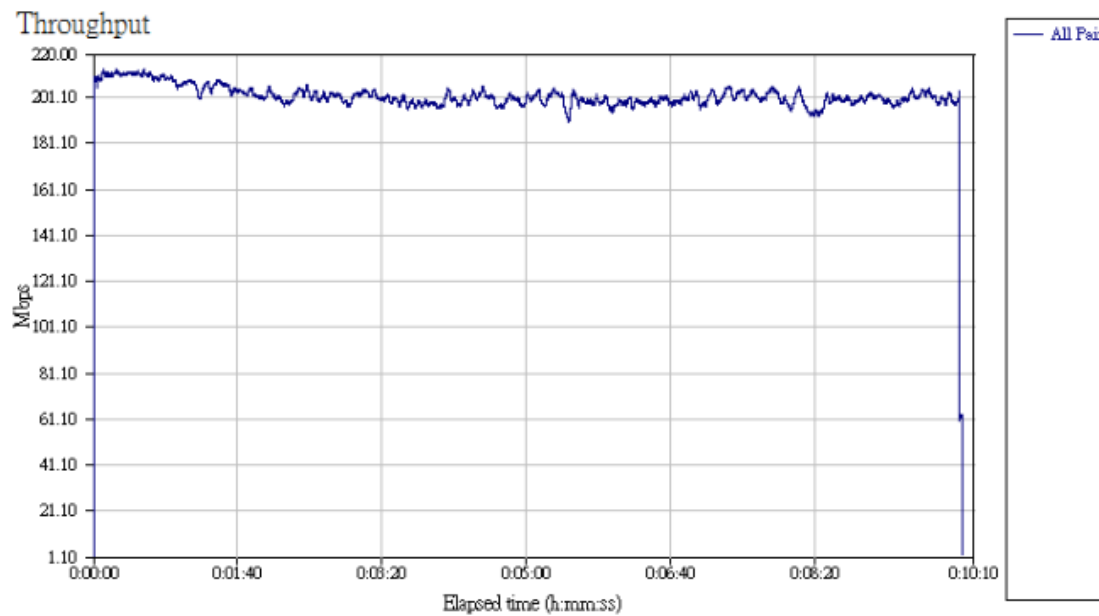
Pair 100	0.975	0.564	1.455	
Totals:	106.711	0.482	1.458	



### 3.16 雙路無線, Video Streaming, RTP/UDP, HT40, PC1 ← PC2 170Rx

#### Throughput

Pair 170	1.201	0.708	1.453	0
Totals:	201.299	0.631	1.460	

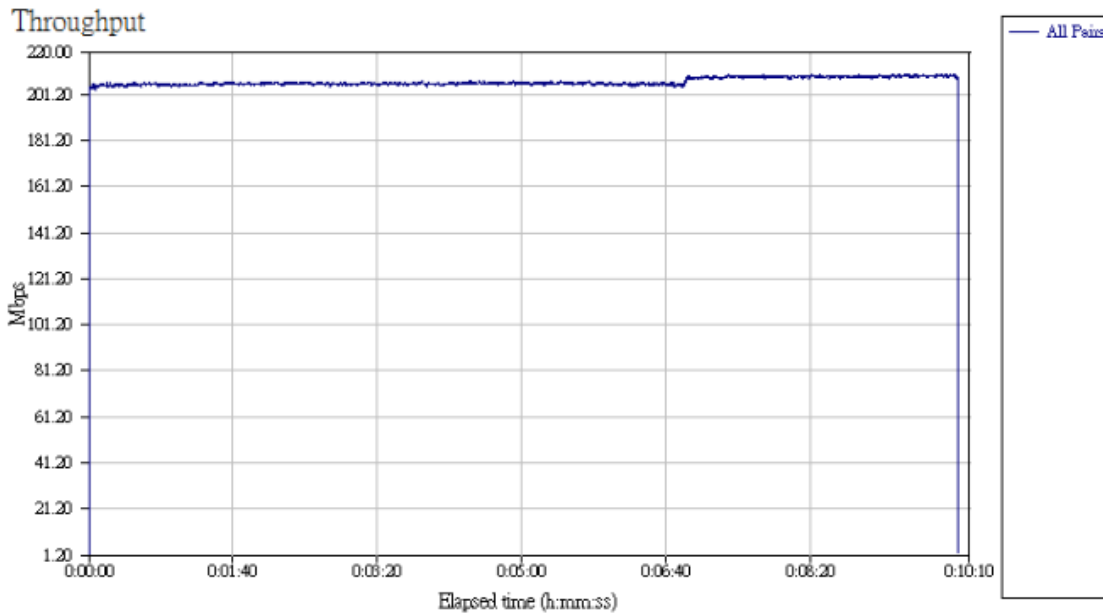




### 3.17 雙路無線, Video Streaming, RTP/UDP, HT20, PC1 ↔ PC2 80Tx80Rx

#### Throughput

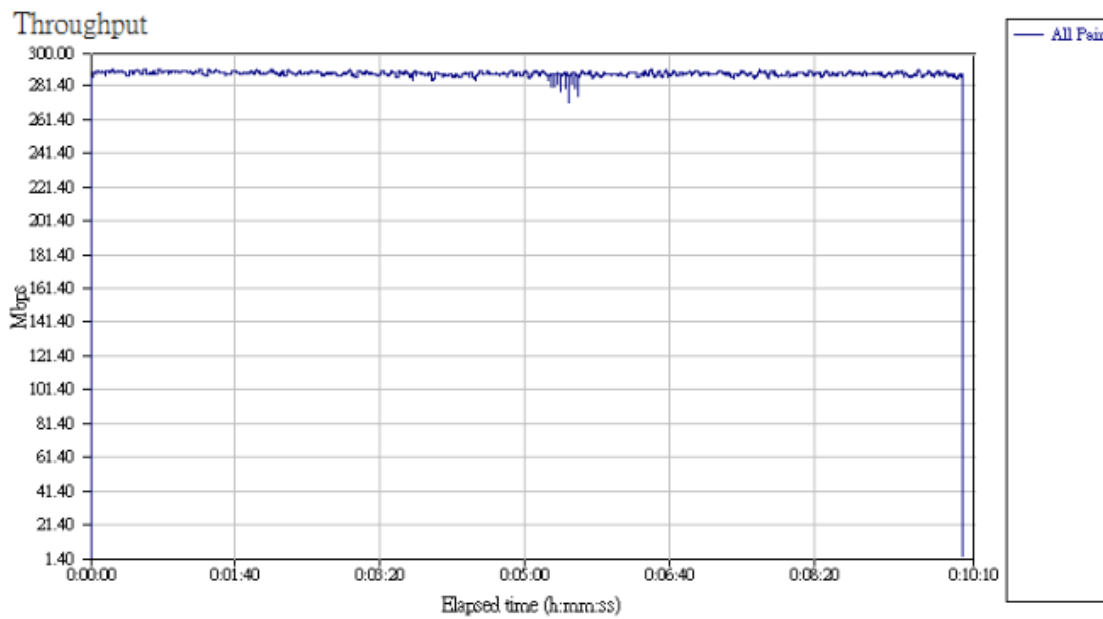
Pair 200	1.289	1.110	1.438	C
Totals:	206.895	0.543	1.456	



### 3.18 雙路無線, Video Streaming, RTP/UDP, HT40, PC1 ↔ PC2 100Tx100Rx

#### Throughput

Pair 200	1.439	1.377	1.470	C
Totals:	288.652	1.196	1.487	





## Appendix I

無。