

# Airmobile

INSIGHT TO UNDERSTANDING  
WIFI AND INTERNET QUALITY  
WITH AIRMOBILE

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Airmobile Android application can be used to perform a WiFi audit during the installation stage or, later on, in the production phase. The application provides number of parameters that describe network's performance. They are visualized in the user interface and logged on the Airmobile server.

***The multi-target throughput measurements help finding the network bottlenecks***

**The throughput requirements**

A typical WiFi audit often focuses on the user experience which is often measured by available throughput, in Mbps. Airmobile provides as many as three throughput values. They are MCS or WiFi data rate, application throughput to destination 1 and application throughput to destination 2.

- MCS (WiFi data rate) shows the link speed of the WiFi connection. It reflects the quality of the radio communication between the access point and the client. It is always higher than application throughput.
- Application throughput to destination 1 is the average available throughput between the client and the destination 1, which is usually placed on the local network. This throughput value is often used to assess the speed of the WiFi network alone.
- Application throughput to destination 2 is the average available throughput between the client and the destination 2, which is usually placed somewhere on the Internet. This throughput value is often used to assess the speed of the Internet connection.

The multi-target throughput measurements help finding the network bottlenecks.

## How do I read those numbers?

### Example 1

High MCS, high throughput 1 (=throughput to destination 1), low throughput 2 (=throughput to destination 2)

This means: good radio link quality, high WiFi throughput, low Internet throughput.

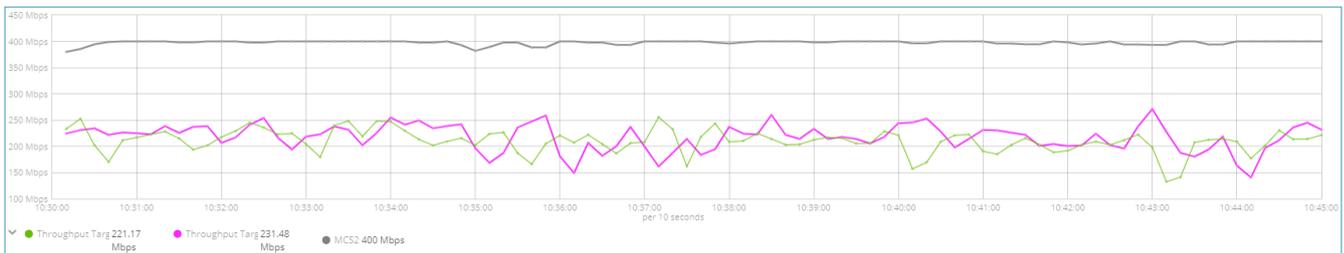


Internet throughput is the bottleneck, the WiFi network can deliver much more than the Internet connection. Upgrading the latter can give much better performance for all Internet based services.

### Example 2

High MCS, high throughput 1, high throughput 2

This means: good radio link quality, high WiFi throughput, high Internet throughput.

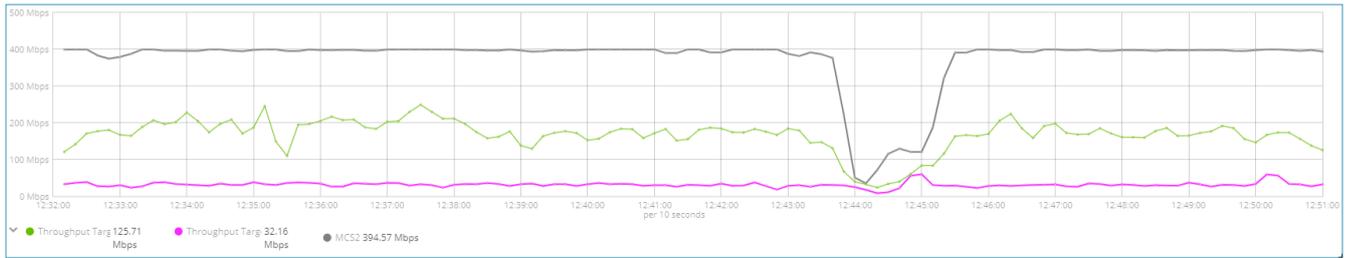


An ideal situation. Extremely high throughput of over 200 Mbps all the way to the Internet. The fact that the application throughput is more than a half of the MCS value indicates a healthy WiFi with minimal client load and without interferences.

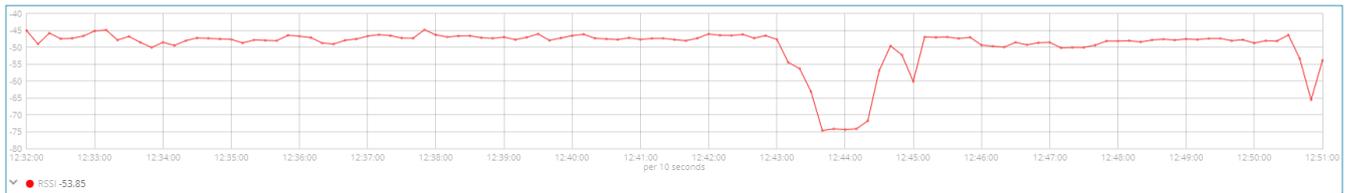
### Example 3 (around 12:44)

Low MCS, Low throughput 1, low throughput 2

This means: bad radio link quality, low WiFi throughput, low Internet throughput.



The bad link quality is responsible for low throughput across the board. It could be caused by a very low signal level, which indicates bad coverage or a lot of interferences.

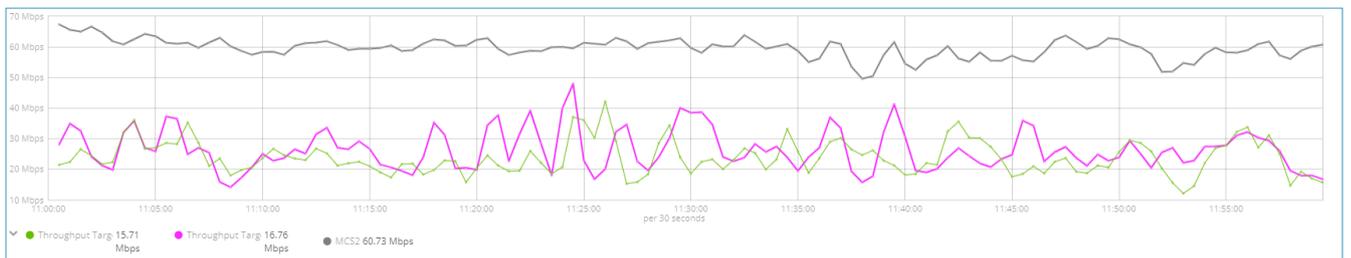


Closer look at the RSSI reveals a low signal strength around 12:44

#### Example 4

Constantly low MCS, Low throughput 1, low throughput 2

This means: slow WiFi client, which primarily affects the low WiFi and Internet throughput.



It is usually the WiFi client, not the access point, that limits the maximal WiFi data rate. In this example the client had a 2.4GHz-only, 1 spatial stream radio, which translates to maximal MCS of 72.2 Mbps.

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## WiFi network verification

The throughput values together with other WiFi parameters can quantify performance of a WiFi network. Tables below list requirements for three different WiFi network levels.

### Basic level

Parameter	Value
MCS	> 20 Mbps
WiFi throughput	> 5 Mbps
Internet throughput	> 2 Mbps
WiFi latency	< 20 ms
Internet latency	< 100 ms
RSSI	> - 70dBm
Band	any

### Standard level

Parameter	Value
MCS	> 30 Mbps
WiFi throughput	> 10 Mbps
Internet throughput	> 8 Mbps
WiFi latency	< 15 ms
Internet latency	< 50 ms
RSSI	> - 67dBm
Band	any

### High level

Parameter	Value
MCS	> 60 Mbps
WiFi throughput	> 40 Mbps
Internet throughput	> 20 Mbps
WiFi latency	< 10 ms
Internet latency	< 30 ms
RSSI	> - 65dBm
Band	5GHz