



THE ALTAI A8N SUPER WIFI BASE STATION
IMPROVES 20 TIMES
IN THROUGHPUT CAPACITY
OVER STANDARD 802.11G ACCESS POINTS

WHITE PAPER

The use of 8x8 MIMO patented smart antenna technologies, which is technologically leading in the market, provides this distinctive throughput performance advantage. The benefits, unique features and technologies of the A8n series are explained in detail in this white paper.

1. Overview

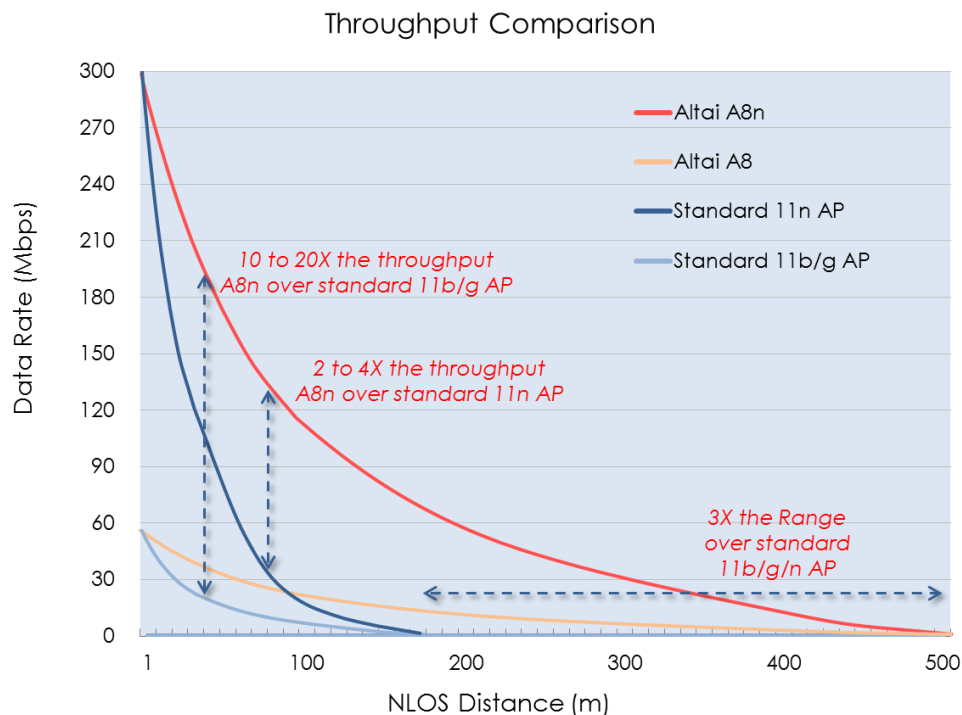
Using the Altai patented Smart Antenna technologies, the brand new 802.11n A8n series Super WiFi base station not only provides 3 times the range coverage, but also 20 times the throughput at range as compared to standard 802.11g access points.

Of greater importance, when we compare the coverage performance of the two types of APs, the comparison only on their maximum throughput capability is not enough; we have to compare the throughput at every location within the coverage area. The Altai A8n provides on average 2 to 4 times higher throughput at range as compared to standard 802.11n access points, and the Altai A8-Ein with its integrated antenna array provides an even higher throughput ratio.

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2. Throughput Improved Dramatically

- The A8n series operating in HT40 802.11n mode supports up to 300 Mbps data rate at 2 streams, which is greater than 5 times higher in data rate than a 54 Mbps 802.11g AP.

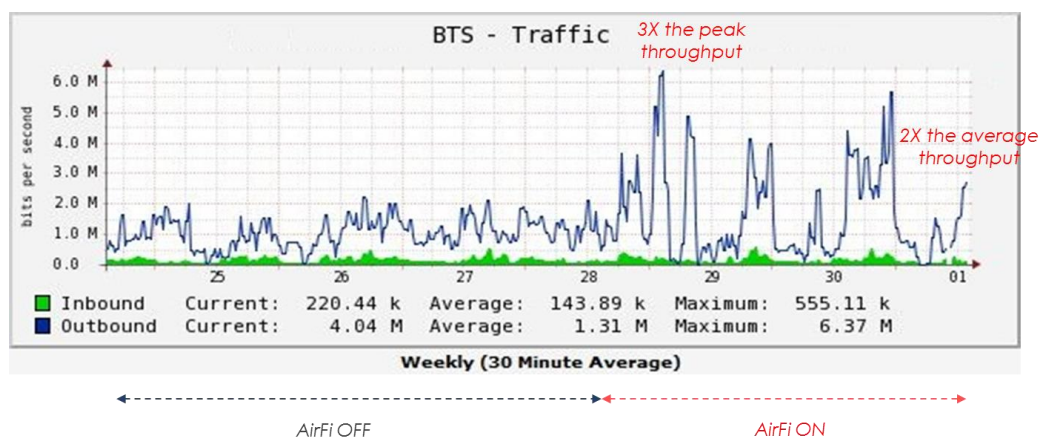


Above is a simplified throughput diagram for illustration purpose only

- From the diagram above, we can see that the throughput of the A8n is 2 times (180 vs. 90 Mbps at around 50 m) to 4 times (120 vs. 30 Mbps at around 90 m) better on average than a standard 11n AP, particularly at the key mid ranges distances.
- Combining the two results of the above, we can see that the A8n supports on average 10 to 20 times the throughput as compared to an 802.11g AP.
- To obtain the same average throughput, 10 times the number of standard 11n AP's need to be installed as compared to the A8n. Given that the coverage range of an A8n is 3 times that of a standard 11n AP this means the cost per throughput of the A8n is much lower and deployments using the A8n series are significantly more cost effective.

3. Advanced Throughput Optimization

- The Altai "AirFi" technology is the latest advanced software control wireless algorithm developed by Altai for further optimizing the A8n base station and system throughput capacity performance.
- Using the AirFi feature will optimize the wireless bandwidth for the high speed clients as well as the low speed clients. This results in an average 3 times improvement of the client throughput and 2 times the system throughput.
- The performance of AirFi can be seen most dramatically in networks where degradation is occurring due to low speed clients dragging down the overall system capacity.



4. 2.4 GHz and 5 GHz Clients Supported Concurrently

- The Dual Band Dual Concurrent (DBDC) feature of the A8n supports both 2.4 GHz and 5 GHz clients operating simultaneously under one base station.
- Over 400 MHz of bandwidth in the 5 GHz spectrum can be utilized (Regulatory Domain Dependent).

5. User Capacity Doubled

The A8n supports up to 512 concurrent users, which is double the user capacity of the 802.11a/b/g A8 series. The increase in the number of concurrent users is designed to meet the ever increasing number of smartphones, tablets and other users.

6. Additional Built-in Deployment Tools

To simplify deployment and maintenance, the following features are integrated in the A8n:

- *Iperf* throughput test utility
- 2.4 GHz and 5 GHz channel scan
- Automatic and manual channel selection
- Time-of-date channel scheduling – you can pre-scheduled the system to operate at different channels at different times of a day, for the best possible channel performance.

7. Technological Leading 8x8 MIMO Smart Antenna

- The 8x8 MIMO patented smart antenna technologies using multiple access radios as employed by the A8n provide significantly greater performance over standard 2x2 or 3x3 MIMO standard AP's in terms of better multi-path tolerance, better SNR, lower packet error, higher antenna diversity and higher RF link budget.
- Increased link reliability is attained by using a higher number of multiple paths, especially noticeably in deep fading environments.
- Substantially improved interference tolerance due to the increased number of antennas and radios, along with reduced interference generation by using directed beams for each downlink data packet.

8. 8x8 MIMO Antenna Array

- The A8-Ein, the single sector coverage version of the A8n, is equipped with an integrated sector antenna array which provides additional spatial antenna diversity as compared to the standard A8n.
- The A8-Ein has arranged up to 1.7 km, providing a footprint that matches a 3G base station in urban areas.
- The A8-Ein is designed for 3G base station co-location for long range high capacity 3G data offload applications and is equipped with the necessary RF filtering to prevent interference from, or interference to the 3G base station even when co-located at the same site.

9. Spatial Multiplexing

The A8n supports transmitting data in parallel paths to increase the throughput capacity.

10. Channel Bonding

- The A8n supports 20 MHz and 40 MHz channels in both the 2.4 GHz and 5 GHz bands.
- It supports data rate up to 300 Mbps.

Contacts Information:

Headquarters:

Altai Technologies Limited

Unit 209, 2/F, East Wing, Lakeside 2,
10 Science Park West Avenue,
Hong Kong Science Park, Shatin, Hong Kong
Web: www.altaittechnologies.com
Tel: + 852 3758 6000
Fax: + 852 2607 4021
Email: info@altaittechnologies.com

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